REPORT FOR 1898

ON THE PROGRESS OF PHARMACY IN ITS RELATION TO THE FUTURE REVISION OF

THE BRITISH PHARMACOPŒIA OF 1898.

A DIGEST OF RESEARCHES AND CRITICISMS.

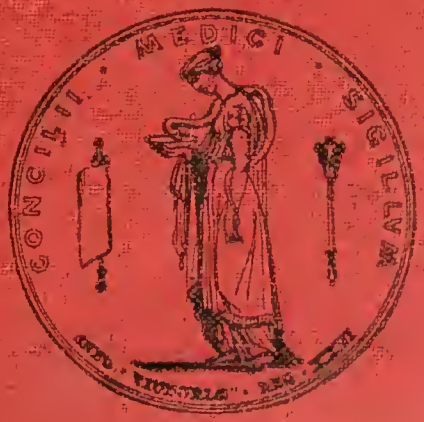
PREPARED FOR

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION OF THE UNITED KINGDOM.

BY

DR. JOHN ATTFIELD, F.R.S.

EDITOR OF AND REPORTER ON THE PHARMACOPŒIA OF 1898 FOR THE COUNCIL.



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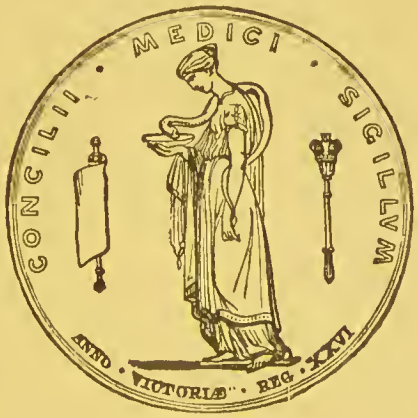

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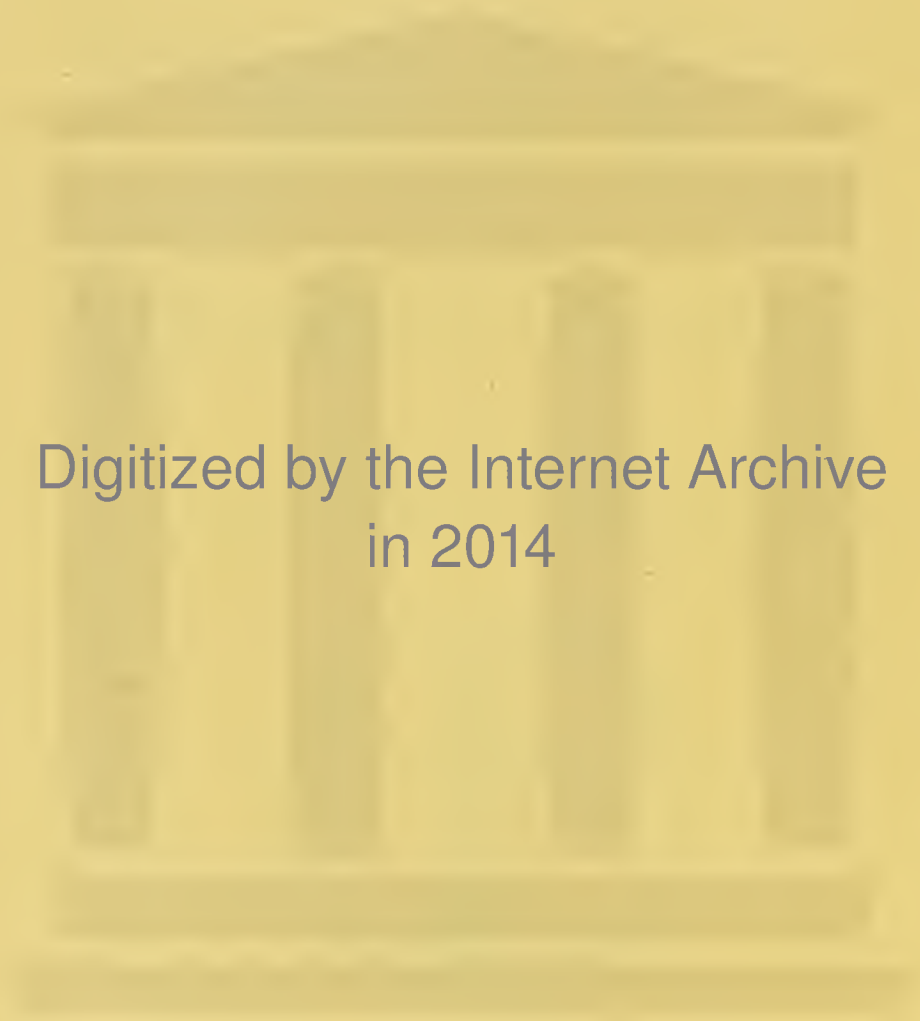

To the PHARMACOPŒIA-COMMITTEE *of the* MEDICAL COUNCIL.

Mr. CHAIRMAN and GENTLEMEN,—

In accordance with your instructions I have collected, condensed, and commented upon all the published researches, suggestions, and criticisms which would in my judgment aid in the future revision of the text of the present *British Pharmacopœia*; the researches being those made public during the latter part of 1897, when the labours of committees engaged in compiling the *Pharmacopœia* had ceased, and those published during 1898; the criticisms being those printed in the journals of medicine and pharmacy between April 9 and December 31, 1898. No research or suggestion has been considered too unimportant for your notice; while every criticism that in the judgment of your sub-committee appeared likely to be of value to the COUNCIL is cited in the accompanying Report.

In checking the many references kind private aid has been rendered, while Mr. E. M HOLMES has been good enough to contribute the replies to the purely botanical criticisms.

The consideration of suggestions and criticisms relating to the construction of the *Pharmacopœia*, longevity of editions, coequality or otherwise of publication and operation, completed imperialisation, nomenclature—both general and special, typography and other bibliographical details, relations to the underlying sciences, respective medical and pharmaceutical relationships, posology; the consideration also of suggestions and criticisms relating to the appendices and the index, and of questions relating to *Addenda*; are either not treated in this Report or only incidentally. These and similar matters might be commented on, if at all, at the probable mid-age period of the life of the present *Pharmacopœia*.

Much remains to be done before a *British Pharmacopœia* can approach as near to perfection as it can be carried by human foresight. But an examination of the following pages by any one acquainted with the official work itself will show that the compilers of the present issue brought the book fairly abreast of the knowledge of the day at the time, the autumn of 1897, when the sheets were closed to further additions, and with the minimum of those errors or weak points from which no such work can be wholly exempt.

The materials for this Report were collected and arranged between January, 1899, and April, 1900, during the intervals of editorial labours connected with the forthcoming Indian and Colonial *Addendum* to the *Pharmacopœia*.

I have the honour to be, Mr. Chairman and Gentlemen,

Your obedient servant,

JOHN ATTFIELD.

299, Oxford Street, London:
June, 1900.

ABBREVIATIONS.

A. J. P.	American Journal of Pharmacy.
B. & C. D.	British and Colonial Druggist.
B. M. J.	British Medical Journal.
B. P.	British Pharmacopœia.
Ber.	Berichte der Deutschen Chemischen Gesellschaft.
C. & D.	Chemist and Druggist (Journal).
C. & D. Diary	Chemists' and Druggists' Diary.
P. A. P. A.	Proceedings of the American Pharmaceutical Association.
P J.	Pharmaceutical Journal.
U. S. P.	United States' Pharmacopœia.
Y. B. P.	Year-Book of Pharmacy.

Fuller abbreviations, as Journ. Chem. Soc., Journ. Soc. Chem. Ind., &c., will be sufficiently explanatory to the readers of this Report. The titles of less known Journals, &c., are given in full. Ed. = Editor. Rep. = Reporter.

REPORT FOR 1898

ON

THE BRITISH PHARMACOPŒIA OF 1898.

A DIGEST OF RESEARCHES AND CRITICISMS.

Acaciæ Gummi.—The Ed. C. & D. LII, 628, thus writes: "Gum acacia happens to be the first article, and, whether intentional or not we cannot say, but it strikes the keynote. Scarcely any article in the book has escaped revision in the paragraphs devoted to 'Characters and Tests.' Yet these show over-elaboration rarely, although they give explicit directions for crucial as well as simple tests." Respecting the extended characters and tests now official under *Acaciæ Gummi*, in another journal of pharmacy, P.J. LX, 390, we read as follows: "Gum arabic is thus limited to the finest qualities, and the use of gums like the Australian varieties, containing tannin, or of gums like that of Sennaar, which gives a glairy mucilage, is excluded."

Acacia gums of all grades and from many parts of the world are met with in British trade. Yet the official statements suffice, apparently, for the exclusion of varieties unfit for medicinal purposes. But other than acacia gums have been recommended for official use by competent authorities. The gum of *Feronia elephantum*, Corr., for instance, and that of *Anogeissus latifolia*, Roxb. KEMP, C. & D. LIII, 981, says: "It is very inconvenient to have two official varieties of soluble gum . . . but gummi indicum is too important to be left out." This is, doubtless, the case, and it would be still more confusing to have three or four or more officially recognised botanical varieties, which is likely to occur as the present largely imperialised *Pharmacopœia* becomes more and more fully an *Imperial British Pharmacopœia*. The REPORTER suggests that pharmacists should still further improve the physical and chemical definitions of gum for official purposes, the aim being to displace the present official description of "*Acaciæ Gummi, Gum Acacia*" by one entitled "*Gummi, Gum*," in which it will be unnecessary to give botanical sources at all; in short, to treat "Gum" for medicinal use as a more or less pure but well-defined chemical substance. It should not be an insuperable task, for one of the many workers at pharmaceutical research who have contributed to the production of the present *Pharmacopœia*, to show that this can, or cannot, be done.

TRILLAT separates gelatin from gum, etc., by precipitation with solution of commercial formaldehyde. P.J. LXI, 545.

Acetous Extracts.—See under *Acidum Aceticum.*

"*Acetracts.*"—See under *Acidum Aceticum.*

Acetum Cantharidis.—See under *Cantharis.*

Acetum Ipecacuanhæ.—In C. & D. LIII, 878 and 914, attention is drawn to the gradual formation of ethyl acetate in this vinegar, and the remark is made that "this is just a revival of the old difficulty with *acetum scillæ.*" Doubtless to the vinegar of squill of the 1867 *Pharmacopœia* ethylic alcohol was added, and objection was taken to its presence by BLAND, THRESH, REDWOOD, MARTINDALE, GREGORY, and CONROY; and the omission of the alcohol, in the 1885 *Pharmacopœia,* was commended by MARTIN, MABEN, ROBINSON, RUSHTON, and others. But the objection to the alcohol in the case of squill vinegar was that it promoted instead of retarding decomposition, not that it favoured the production of ethyl acetate. So far no complaints of the stability of ipecacuanha vinegar have been published. The possible production of some ethyl acetate was foreseen, but not regarded as being likely to be objectionable. Whether it is so or not remains for competent observers to disclose in future pages of the journals of pharmacy or medicine.

The directions for preparation are: "Mix, filter, and if necessary add sufficient Diluted Acetic Acid to produce one pint." In any case very little added acid would be necessary, and probably nine operators out of ten would so drop it on to the filter as to wash down the absorbed vinegar. See the Preface, pages xiv and xv. But MCMILLAN (P.J. LXI, 682; C. & D. LIII, 1003; B. & C. D. XXXIV, 785) says: "Acetum ipecac. ought to read, 'Mix, add sufficient diluted acetic acid to produce one pint, filter.'" He then adds: "As at present it was first filtered, and then the diluted acetic acid added, so that the finished product must be weakened to the extent of what was absorbed by the filter paper."

A much more important question is whether *Acetum Ipecacuanhæ* is still required. It is now simply a spirituous solution of the active principles of ipecacuanha, to which acetic acid has been added. It is not a solution of the active principles in acetic acid. The question arises, What purpose does the acetic acid now serve?

Acetum Scillæ.—The *Pharmacopœia* states that 2½ ounces of bruised squill require of diluted acetic acid "1 pint, or a sufficient quantity," and adds, "the resulting vinegar of squill should measure one pint." An editorial in one of the journals of pharmacy, C. & D. LIII, 489, contains the following sentences: "Two authorities have stated in print that this preparation is to be made up to a pint. That is perhaps a reasonable interpretation of the official intention, but it is to be observed that the B.P. does not say so."

Acidum Aceticum.—The solvent power of acetic acid on the active principles of drugs has been recognised for at least 2300 years in the employment of medicated *aceta* or *vinegars.* But these were made with

the old varieties of brewed vinegar, hence were unstable, and have gradually gone out of use. SQUIBB, P.A.P.A. XLI, 418, proposed to substitute the ethylic alcohol of tinctures by a 60 per cent. acetic acid. REMINGTON, P.A.P.A. XLV, 687, made "fluid acetracts" with 10 per cent. acetic acid. These, evaporated, yielded powders to which the name "acetracts" was given, and the latter, after standardisation, were dissolved in various solvents—mixtures of alcohol and water with and without glycerin, also in different strengths of acetic acid. Ipecacuanha, cinchona, colchicum seed, and other drugs were successfully thus dealt with. A fluid extract of sanguinaria, made with 60 per cent. acetic acid, showed no precipitate at the end of four years. See A.J.P. LXIX, 121–126. Messrs. SQUIBB reported, *Ephemeris*, V, p. 1938, and P.J. LX, 409, that the process was "so effective that a thoroughly representative extract can be obtained, which contains such a slight excess of acetic acid that it may be practically disregarded," and that the products had not deteriorated after six to eight months. These "Acetous Extracts" were miscible with water without precipitation, economical, and, unlike some other extracts, contained compounds (acetates) no longer incompatible with many of the medicaments of prescriptions. REMINGTON reported, A.J.P. LXX, 543–545, continued experiments on "fluid acetracts," all of which were satisfactory. STEDEM, A.J.P. LXX, 366, gave details of the cost of extracts made with 40 per cent. acetic acid.

Acidum Aceticum Dilutum.—This and the diluted hydrochloric, nitric, sulphuric and phosphoric acids are officially directed to be made by the aid of measuring vessels, or, for greater exactitude, by weighing the strong acid and diluting with the water to a stated measure. For example, $2\frac{1}{2}$ fl. ozs. of acetic acid are to be diluted up to a pint of product; 124·7 c.c. to 1000 c.c. Alternatively, 1137 grains weight of acetic acid are to be diluted to a pint; 130·2 grammes to 1000 c.c.; while, to secure accuracy of the measurements, pharmacists have been recommended to use, instead of the ordinary wide-mouth measuring vessel, a flask graduated by a mark in its narrow neck. These alternative procedures, however, involve complications; and inasmuch as pharmacists, so far, have not objected to this partial infringement of their favourite British predilections for "solids by weight, liquids by measure," they will not object to see in the next *British Pharmacopœia* that the water as well as the acid is directed to be weighed, especially as such procedure will harmonise with those habits of accuracy which characterise pharmacists. Nothing in the *Pharmacopœia* prevents, everything promotes, the adoption by pharmacists of this simple method forthwith. For example, the sp. gr. of diluted acetic acid is 1·006. In other words, 1000 c.c. weigh 1006 grammes. Of this 1006 grammes, 130·2 (see the formula) are the strong acetic acid, the remainder ($1006 - 130{\cdot}2 = 875{\cdot}8$ grammes) distilled water. The author of "A Short Guide" to the *Pharmacopœia* regrets that these diluted acids are not prepared as in the United States Pharmacopœia—that is, by weight only. The English journals of pharmacy agree. "To measure 6·035 fluid ounces . . . . will trouble even

pharmacists to accomplish satisfactorily," P.J. LX, 344. "To prepare the diluted acids on the large scale it is much more convenient to weigh the proportions and just as accurate," B. & C. D. XXXIII, 522. STEPHENSON, in 1878, P.J., 3rd ser. IX, 421, enquired why the amount of water should not he ascertained and specified.

Acidum Aceticum Glaciale.—RÜDORFF, in 1871, P.J., 3rd ser. II, 241, showed that the melting-point and solidifying-point of this acid are identical. The acid recognised in the *Pharmacopœia* is required to melt at 15·5° C. Aceording to RÜDORFF this figure corresponds to a liquid eontaining 99·2 per cent. of hydrogen acetate. But the *Pharmacopœia* allows 99 per cent., RÜDORFF'S melting or solidifying point for which would he 14·8° C. Indeed the official titration figure would, as shown by the following observer, permit an acid of 98·9 per cent. to pass, the melting-point of which would he a little over 14·6° C. Now, from a statement by J. C. UMNEY, P.J. LXI, 242, it appears that the New Zealand Customs officers choose to select the melting-point alone of the *British Pharmacopœia*, and the one official melting-point which alone is mentioned, as their standard, namely, 15·5° C., and if the melting-point of a sample is below this they demand a *pro rata* payment. But the *Pharmacopœia*, while aiming at getting a 99·2 per cent. aeid, melting at 15·5° C., allows a 98·9 per cent. acid, which would melt at 14·6° C. to 14·7° C., to pass as good. If Customs officers choose to take the data of the *Pharmacopœia* as indieating good glacial acetic acid, they should take, as their minimum, acid of 98·9 per cent., or, if they ehoose to treat this strength in terms of melting-point, should take 14·6 to 14·7° C. and not 15·5° C. Broadly, the official acid should contain 99, may contain 99·2, may contain 98·9 per eent. Customs officers are within their right in selecting any standard they please. But if they adopt "the strength of the *British Pharmacopœia*," without qualification, they should adopt all three figures, not one figure only, of the *Pharmacopœia*. If they select a single figure as indieating a limit of "strength of the *British Pharmacopœia*," it should he the minimum official strength, 98·9, whether ascertained physically or chemically; subject, of course, to any improvements of either method or of standard.

Acidum Arseniosum.—"No excuse can now be given for such chemical archaisms, dignified even though they may be hy appearing in Latin, as *acidum arseniosum* and *acidum chromicum*, in a work which has the word 'hydroxide' substituted for the older word 'hydrate.'" DOBBIN, B. & C. D. XXXIV, 809. *Acidum arseniosum* is an old medieal and pharmaceutical name for a powerfully poisonous drug, and any alteration of the name might involve risks to health and life. The modern chemical names, *arsenious anhydride* and *chromic anhydride*, are printed immediately beneath the Latin. The REPORTER would also refer the critic to page x of the Preface, lines 3 to 12.

SPURWAY, P.J. LX, 562, has experimentally examined the new details in the titration process, and finds that they prevent a possible error under the 1885 details. He also eonfirms the value of WOOLLEY'S nse of borax, P.J., 3rd ser. XVIII, 581, in place of sodium bicarbonate for the titration.

Acidum Benzoicum.—D. HOWARD, C. & D. LII, 675, says: "Benzoic acid, if made synthetically, is let off with no test at all, except that it is allowed a different melting and boiling point." The editor of the C. & D. Diary 1899, 493, says: "Mr. HOWARD has overlooked the tests for chlorobenzoic and hippuric acids, which detect impurities common to one or other of the synthetic acids mentioned." The *Pharmacopœia* states the solubility in cold water (see page xiv of Preface) to be 1 in 400; the German Pharmacopœia as 1 in 370 for the natural acid, the United States Pharmacopœia as 1 in 500 for the artificial acid. An experimental revision of the figures at the normal temperature, 60° F. (15·5° C.), and at, say, 50° F. (10° C.) is desirable. See *Solubilities.*

Acidum Boricum.—DOBBIN (B. & C. D. XXXIV, 809; C. & D. LIII, 1008; P.J. LXI, 666) quarreled with the exceptional synonymic position given to the words "hydrogen borate." The B. & C. D. XXXIII, 516, did so eight months previously. DOTT (*op. cit.*) characterised DOBBIN'S comment as hypercriticism. [MASON, C. & D. LIV, 29, says: "To look for absolute uniformity of chemical expression in such a work as the B.P., especially in the face of present-day authorities, seems too much." Jan. 7, 1899.]

The solubility in cold water is officially as 1 in 30. The C. & D. Diary 1899, 493 (published 1898), points out that 1 in 25 would be nearer the truth. See P.J. LXI, 544. It would be well to ascertain the solubility at 50° F. (10° C.) and so state it. See p. xiv of the Preface. The solubility in glycerin is officially stated as 1 in 4. The C. & D. Diary 1899, 493, says Hooper found it to be 1 in 4·4 at 59° F. (15° C.). Other authorities give it as 1 in 4. See also *Solubilities.*

MERCK, C. & D. LIII, 349, warns operators that although the theoretical percentage of water in boric acid is 43·66, some acid may pass off with the water-vapour on heating. His own boric acid lost 46 per cent. Moreover, the commercial acid may contain adherent moisture. The present official figure is 43·6. The REPORTER suggests the use of the indirect magnesia or lime method: that is, drying and calcining with a weighed excess of recently calcined magnesia or lime.

Acidum Carbolicum.—GRIER (the three journals of pharmacy for November 18 or 19, 1898) thought that Phenol should be the official name and Carbolic Acid a synonym. Phenol already is the English official name. GRIER probably desires the Latin name to be Phenol, or perhaps *Phenolum.* The B. & C. D. XXXIII, 516, anticipated GRIER'S criticisms seven months previously, April 22, 1898.

All the critics agree that the increased purity of phenol now officially required is justified. The B. & C. D. XXXIII, 516, after noticing the new requirements, puts the matter thus: "which means a more expensive acid must now be sold under the name of carbolic acid, B.P." Even so the improvement would be justified, but the C. & D. Diary 1899, 493, says: "this acid is now produced cheap and pure in enormous quantities."

HOSEASON, B. & C. D. XXXIV, 651, suggests the addition of a quantitative process, "for example, treatment with a known excess of

bromine solution and titration of the residual bromine by decinormal thiosulphate."

Acidum Chromicum.—"*Acid. Chromic.* should also have been removed from the acids and placed under *Chromicum.* There are no tests given for either iron or lead, which are occasionally present in traces in commercial chromic anhydride." B. & C. D. XXXIII, 516.

Acidum Citricum.—D. HOWARD, C. & D. LII, 674, objected that the presence of iron rendered the official test for lead unreliable, with the result that, "if" the point of neutrality prescribed in the *Pharmacopœia* were passed, iron might be reported as lead. But the *Pharmacopœia* includes the prior statement that iron is absent from citric acid: "it should yield no characteristic reaction with the tests for copper or iron." Moreover, WARINGTON, *Journ. Soc. Chem. Ind.* XII, 100, says: "The pure tartaric and citric acids I have employed, when dissolved and treated with excess of pure ammonia, remain entirely unaffected by ammonium sulphydrate. This is the most extreme test for lead in these acids with which I am acquainted. . . . The amount of iron present in commercial tartaric and citric acid is, as far as my experience goes, too small to interfere with the test for lead just described;" that is, the official test, but neutrality passed; in other words, HOWARD'S conditions. However, as D. HOWARD asserts that sufficient iron is now present to render the lead test unreliable—and as a manufacturer he ought to know—the MEDICAL COUNCIL has ordered the word "nearly" to be read before the word "neutralised" in line 21 of page 10 of the *Pharmacopœia.*

Acidum Gallicum.—DOBBIN (the three journals of pharmacy of December 23 and 24, 1898) wonders why "the decimal point" should be introduced into the formula for citric acid and not in that for gallic acid. It would be quite easy to employ "the various signs, such as a bracket, the comma, the period, and the decimal point," according to some one preconceived idea. But would not that be raising a mere expedient to the region of important principles? Such an inelastic use of the signs does not yet obtain in chemical literature. Often they are present, often absent. Brackets themselves are often as suggestive as points, though there should be no objection to the conjoined employment of these signs. DOBBIN does not find a single actual error in any one of the "chemical formulæ for almost two hundred different substances." See also comments on his criticisms under *Phenacetinum.*

OLIVER, P.J. LIX, 315, suggests the following as an additional test distinguishing gallic from tannic acid:—To 1 grain add 90 minims of solution of ammonia. A deep salmon-red solution results. To this add 10 drops of strong nitric acid, shake, set aside. In the case of gallic acid no precipitate forms on standing for some length of time, but the solution is changed to a deep red. In the case of tannic acid a flocculent precipitate results in a few seconds, soluble in excess of acid. It would be well if several observers would record their experience of OLIVER'S test.

Acidum Hydrochloricum Dilutum.—See under *Acidum Aceticum Dilutum.*

Acidum Lacticum.—DUNLOP, P.J. XLI, 344, says: "It is not stated under acid. lactic. and acid. phosph. concent. that the percentage strength is by weight. This is expressly done in the case of every other acid, both strong and diluted." This is scarcely an exact statement. In the case of nearly every other acid, the word "parts," not "per cent.," is used. But the words "per cent. by weight" are sometimes employed; hence, though strictly speaking they are unnecessary, they may as well in future be used in the two cases mentioned.

Acidum Nitricum Dilutum.—See under *Acidum Aceticum Dilutum.*

Acidum Nitrohydrochloricum Dilutum.—An investigation of the rate at which the nitric and hydrochloric acids, in the presence of the water, attack each other from day to day, during the officially prescribed period of fourteen days for the interaction, would be interesting.

Acidum Phosphoricum Concentratum.—This acid, sp. gr. 1·5, contains 66·3 per cent., by weight, of hydrogen orthophosphate and 33·7 per cent. of water. A still stronger acid is common, indeed is used in testing the official oils of cajuput and eucalyptus under the designation of "phosphoric acid of commerce of specific gravity 1·750," and it contains 75 per cent., by weight, of hydrogen orthophosphate and 25 per cent. of water. One of the journals of pharmacy, B. & C. D. XXXIII, 516, suggests its official recognition in place of the present "Concentrated Phosphoric Acid." It would certainly be equally useful for the preparation of the three syrups in which phosphoric acid is employed and for the preparation of the "Diluted Phosphoric Acid."

Acidum Phosphoricum Dilutum.—HOSEASON (P.J. LXI, 530; B & C. D. XXXIV, 651) suggests that the quantitative test by aid of lead oxide should be displaced by the magnesium pyrophosphate test.

The REPORTER suggests that if qualitative tests showed freedom from impurities, a standard soda solution employed with phenolphthalein, or some such volumetric operation, might perhaps serve for quantitative purposes.

Acidum Sulphuricum Dilutum.—See *Acidum Aceticum Dilutum.*

Acidum Tannicum.— *Tannic Acid* is now the primary name, *Tannin* (Syn.) secondary. In the next *Pharmacopœia* these names might probably be transposed, certain objections previously alluded to (*vide Acidum Arseniosum, ante*) not applying in this case.

Acidum Tartaricum.—A writer in the B. & C. D. XXXIII, 516, considers that such constitutional formulæ as that officially given for this acid are altogether out of place in a pharmacopœia. He is probably right.

Only two or three have at present been included, and quite tentatively. (See p. xiv of the Preface.) As to the test for lead, see *Acidum Citricum*.

Aconiti Radix.—"There is scarcely a pharmacist who has not an opinion upon the exclusion of exotic aconite root." C. & D. LIII, 550. "The limitation of the official drug to that grown in Britain . . . has brought about an impossible condition of things. . . . This ridiculous position can be relieved in about ten years if druggists are willing to pay ten times more for English root than for German." C. & D. Diary 1899, 495. HOLMES tells the REPORTER that this diarist's statements respecting "an impossible condition of things," "cultivation . . . . gradually been decaying in England," "output of English root is quite inadequate," are, each of them, not according to fact.

Aconitina.—"Aconitine is defined as an alkaloid having the formula $C_{33}H_{45}NO_{12}$, but no authority is given for the doubtful statement." P.J. LX, 394. "The *Pharmacopœia* in officialising crystallised aconitine has adopted the factors suggested by DUNSTAN." C. & D. Diary 1899, 495.

Adeps.—"The suffix 'præparatus' has been dropped from the Latin of lard." C. & D. Diary 1899, 495. Yes. All lard is "prepared," as are most official things.

As to the tests. "If 'fusing' means 'beginning to soften' the factor will exclude most American lards, as they begin to melt below 36° C." C. & D. Diary 1899, 495. What "fusing" means will be clear enough if the remaining words of the sentence be read, "fusing at about 100° F. (37·8° C.), and forming a clear liquid at a somewhat higher temperature." From most American lards the lard oil is displaced by the cheaper cotton seed oil. PARRY, C. & D. LII, 891, rightly throws doubts on the colour tests for cotton seed oil. The purer the latter the less evident the colour. Here is an opportunity for research. A good test for lard oil is wanted. In testing lard for vegetable fats FORSTER and RIECHELMANN, P.J. LIX, 548, look for phytosterin. Confirmatory researches in single and separate cases seem desirable. See under *Oleum Olivæ*.

Adeps Lanæ.—For the most recently published criteria of quality, see LIFSCHÜTZ, thus abstracted in C. & D. LII, 720 :—"It should be free from any odour, and must not become sticky under the surface if kept for some time. If heated for half an hour to 240° C. it should not darken in colour, and on exposure to daylight it should not darken, because wool-fat, if properly purified, becomes, if anything, lighter in colour on exposure to sunlight. If $\frac{1}{2}$ gramme of wool-fat is boiled with 5 c.c. of glacial acetic acid, and afterwards on cooling and filtration 4 to 5 drops concentrated sulphuric acid is added, the solution should become brownish yellow, while impure wool-fat gives a green colour after thirty to fifty minutes. As to the amount of free fatty acid which may be present, Dr. LIFSCHÜTZ thinks that a good wool-fat should give a red colour with phenolphthalein when 1 or 2 drops of decinormal soda solution is added Further, adeps lanæ mixed with five times its weight of water, and heated on the water-bath,

should separate very quickly into two perfectly clear layers, and no trace of impurity should be visible at the point where the oil and water come in contact. The ash should not contain lead or manganese. To detect chlorine the wool-fat is boiled with absolute alcohol, acidulated with nitric acid, and, after cooling and filtering, alcoholic nitrate of silver should not make the filtrate opalescent."

Æther Aceticus.—HOSEASON, B. & C. D. XXXIV, 651, thinks that "saponification with an excess of standard alkali and titration by sulphuric acid would be a valuable addition to the pharmacopœial tests." Yes, if it is necessary.

Aitken's or Easton's Syrup.—See *Syrupus Ferri Phosphatis cum Quinina et Strychnina.* "A valuable tonic," LEECH, *Med. Chron.* Apr. and May, 1898. The desires of pharmacists in 1885, 1890 and 1898, for the official recognition of far less medicinally valuable phosphatic preparations (see pp. 29, 48, 84) have been founded on the popular use and large sales of the articles. This foundation is insufficient. See *Extractum Colchici Aceticum.*

Alboline and *Adepsine Oil.*—See *Paraffinum Liquidum.*

Alcohol Absolutum.—As to the name in relation to that of *ethylic alcohol*, some critics do not seem to have read p. xv of the Preface; and no critic offers a better system of names than the official system for the seven different mixtures of ethyl hydroxide and water referred to in the *Pharmacopœia.* As to the improved official requirements, they are generally commended.

Aloe Barbadensis. Aloe Socotrina.—Full and, on the whole, favourable reviews of the official paragraphs are published in P.J. LX, 390. The B. & C. D. XXXIV, 74, gives nearly two columns in large type to a criticism of the spelling *Curaçao* (B.P. 1898) versus *Curaçoa* (B.P. 1885), and leans to the latter, but begs for correspondence. Within a month the same journal, p. 225, prints, in small type, a communication from "A Dutch Correspondent," who states that the word is Gooarahni-Indian and means Great Plantation, is pronounced Koorasahoo rather than Kewrahsaho, and adds: "The spelling Curaçoa cannot be defended under any circumstances, for such a name is nowhere to be found in either Gooarahni, Cariboic, Spanish, or Dutch." The C. & D. Diary 1899, 496, has a long and highly informing article on the commercial origin of aloes at the present time. But HOLMES tells the REPORTER, as regards the diarist's ideas of the odour of Curaçao aloes and Socotrine aloes, either as imported or as sold, that it is a mere case of *quot homines tot sententiæ*; and that, notwithstanding the diarist's statements, Zanzibar Hepatic Aloes and true Socotrine Aloes come from Socotra, or near Socotra, and from Aloe Perryi so far as is known. Further information is needed from the districts of collection.

Aloinum.—The P.J. LX, 344, rightly notes that the Latin name is now made declinable. The C. & D. Diary 1899, 496, remarks that it would have

been better if the B.P. had added to "purified by recrystallisation" the words *from water*, but considerately adds "although the formula implies it." *See* LEGER, P.J. LIX, 189. The addition might as well have been made.

DOHME, A. J. P. LXX, 398, summarises the chemistry and commerce of aloes, describes as follows the work of TSCHIRCH and PEDERSEN, and adds a few experiments of his own. "Socotrine [aloes] also costs about 25 cents a pound, while Curaçoa [*sic*] costs only 3 cents a pound. . . . I have made comparative assays of Socotrine, Curaçoa and Cape aloes, and have found that they contain approximately the following relative amounts of aloin. (M. P., 103° C.) Socotrine aloes, soft in monkey skins, $7\frac{1}{2}$ per cent. average of 3 assays; (M. P., 110° C.) Curaçoa aloes, hard and livery and of a light chocolate color, 18·5 per cent. in 3 assays; (M. P., 107° C.) Cape aloes, hard, glassy and black in color, $4\frac{1}{2}$ per cent. average 3 assays. Inasmuch as practically all the aloin in this country [U.S.A.] is made from Curaçoa aloes as it is in England from Barbadoes aloes, and we have all found that it is usually efficacious and produces the desired effects, we cannot but conclude in the face of the above assays that no reason exists, as far as we know, why we should not use Curaçoa aloes to the exclusion of the Socotrine, especially as it costs only about one-eighth as much. . . . It is emodin, the great laxative, to which rhubarb, senna, cascara, frangula, owe their laxative properties. [This needs confirmation.] It can be obtained from [impure] aloin by extracting with ether, from which it will crystallize, and can be purified by sublimation. Hence Borntraeger's reaction for aloin [P.J. 3, XI, 1045] is not, correctly speaking, a reaction for aloin but for emodin; aloin that has been deprived of emodin not giving the reaction. . . . To sum up the points brought out in this paper: (1) That Curaçoa aloes is as efficient and, being much cheaper, should be used in preference to Socotrine aloes, the greater portion of which as sold to-day is made up anyway of Curaçoa aloes. (2) That the resin of aloes is an ester or organic salt, and varies according to the kind of aloes, and that the varying constituent is the acid, the alcoholic constituent being aloresinotannol and being the same in both Barbadoes and Cape aloes, the only two thus far examined. (3) That aloin contains emodin, to which its laxative property is probably due. (4) That many laxative drugs, such as senna, cascara sagrada, rhubarb, buckthorn bark, besides aloes, owe their laxative property to this substance emodin or some substance like it, derived from anthraquinone, and homologous or isomeric with it. Work is now in progress to show the exact relation of anthraquinone to our well-known laxatives."

Ammoniacum.—DIETERICH (C. & D. LIII, 130, but condensed, as follows, in the C. & D. Diary 1899, 496), says:—"For pharmaceutical purposes only ammoniacum rich in essential oil and of strong odour should be admitted, conditions which only obtain in block ammoniacum. I am unable to speak favourably of the B.P. umbelliferone-test, because it is possible to add small percentages of galbanum to ammoniacum without detecting it in the B.P. way. A much better plan [DIETERICH'S

own] is to treat the substance with strong hydrochloric acid, whereby umbelliferone is split off from its natural ester; the liquid is then filtered, and the filtrate (which contains the umbelliferone) is supersaturated with ammonia, when an intense and characteristic blue fluorescence is produced. The same method may be used for the identification of asafetida and galbanum. Besides this umbelliferone reaction the *Pharmacopœia* should limit the amount of ash to 10 per cent. as maximum. Also the residue left after treatment with alcohol and drying at 100° C. should not be more than 50 per cent." These comments will doubtless receive the attention of British pharmacists. "Dr. DIETERICH'S figure for insolubility is high, as good ammoniacum should dissolve to the extent of 80 per cent. in alcohol (90-per-cent.)." C. & D. Diary 1899, 497. See also Journ. Chem. Soc. LIV, Pt. 2, 59. The P.J. LX, 345, regards the umbelliferone test as having "been advantageously introduced," but a fortnight afterwards, P.J. LX, 390, remarks: "The umbelliferone test seems hardly necessary to distinguish this drug from asafetida and galbanum, for no one familiar with drugs could possibly confound either the odour, taste, or appearance of these gum resins."

Ammonii Carbonas.—HOSEASON, in the three journals of pharmacy for November 18 and 19, 1898, states respecting the quantitative process: "The present test is fallacious, especially in the hands of an unskilled operator." The skilled operator would probably employ excess of acid and then titrate back.

Amygdala Dulcis.—"The place of exportation is not mentioned."—P.J. LX, 390.

Amyl Nitris.—See under *Liquor Ethyl Nitritis.*

Amylum.—DOTT finds from 0·1 to 0·4 per cent. of ash in starch. C. and D. LII, 463.

Anethi Fructus.—See *Aqua Anethi.*

Anisi Fructus.—"On account of the dirty condition of some anise fruit the percentage of ash would have been a useful character." DRUCE, B. and C. D. XXXIII, 671. HOCKAUF, *op. cit.* 597, found from 11 to 43 per cent., 3·6 to 32·8 being insoluble. This matter should be looked into experimentally, and the results be published.

Aquæ.—HYSLOP, P.J. LXI, 119, prefers the trituration and filtration process of the Appendix, B. P., p. 443, but using cotton wool instead of calcium phosphate, to the herb-distillation process of the text. Medicinal waters prepared by the distillatory method are certainly somewhat more liable to be unstable, but even pure oil in pure water is liable to spoil by oxidation. Of this trituration and filtration method of the Appendix, the C. and D. LII, 627, remarks, "This may pave the way to a similar method for home use"—as distinguished from the thus allowed tropical use.

Concerning cotton as a filtering medium for medicated waters, see DOM, P.J. LX, 185. GRIER, in the three journals of pharmacy for November 18 and 19, 1898, prefers paper pulp. Cotton was used in U.S.P. 1880, but in U.S.P. 1890 it was displaced by calcium phosphate because the latter was found in practice to be more convenient. Perhaps the so-called personal equation comes in here. Some one should make comparative experiments and publish the results. Besides calcium phosphate, and cotton, &c., kaolin, talc, glass, pumice, &c., have been recommended.

Aqua Anethi.—The "dill fruit" must be English or German, not Indian or Japanese, the oil of the latter being inferior to that of the former. The paragraphs under "Anethi Fructus" or "Oleum Anethi" seem, however, to suffice for protection. J. C. UMNEY, Y.B.P. 1898, 374; also the journals of pharmacy of Aug. 12 and 13, 1898. See also *Oleum Anethi.*

Aqua Aurantii Floris.—The B. & C. D. XXX, 516, says: "The note that commercial orange-flower water 'is a saturated solution of the essential oil of the fresh flowers' appears out of place and supererogatory," but does not offer a more practically useful definition of what is at present "the orange-flower water of commerce," or of the liquid that the *Pharmacopœia* demands of commerce. HYSLOP, P.J. LXI, 119, praises the official definition. See also *Aqua Rosæ.*

Aqua Rosæ.—In reference to the official statement that "the rose-water of commerce is a saturated solution of the essential oil of the rose flowers," the C. & D. LII, 617, remarks: "it would have been more correct to say 'a saturated solution of the volatile principles.'" The B & C. D. XXXIII, 516, remarks: "The foreign triple rose-water is recognised, only it is assumed that the same variety of rose yields otto. According to statements from Grasse and Bulgaria, this is not accurate." Have these critics realised that the *Pharmacopœia* defines what it means by oil and otto of rose? For a botanical criticism by DRUCE, see *Oleum Rosæ.* HYSLOP, P.J. LXI., 119, commends the official *Aqua Rosæ.* See also under *Aqua Aurantii Floris* and *Unguentum Aquæ Rosæ.*

Aqua Sambuci.—This may be made from fresh or salted flowers. HYSLOP, P.J. LXI, 119, would expunge "the effete salted stuff," for, he says: "The water distilled from fresh elder flowers will keep good for twelve months." Is this the general experience?

Arachis Oil.—See under *Oleum Olivæ.*

Araroba.—From "Andira Araroba, *Aguiar.*" DRUCE says, P.J. LXI, 202, that "it would appear better, assuming that KUNTZE is correct in his statement that AUBLET'S genus is valid, to follow the original spelling and write *Vouacapoua Araroba* (Aguiar)." See also DRUCE, B. & C. D., XXXIII, 671. HOLMES says (through the REPORTER) that, as remarked by JUSSIEU, AUBLET had not seen the flowers; that the name *Vouacapoua* is not in accordance with the rules laid down by DE CANDOLLE and

SPRENGEL; that the name *Andira* has the support of long usage; and adds, "DRUCE'S recommendation to write the name *Vouacapoua Araroba* (Aguiar) is very misleading. If used at all it should be *Vouacapoua Araroba* (Druce), since AGUIAR never used the name, and one would look in vain in any publications of AGUIAR for it."

Araroba should have an ash-limit fixed for it. J. C. UMNEY, C. & D. LIII, 551.

Arsenii Iodidum.—HOSEASON, B. & C. D., XXXIV, 651, thinks that a suitable process for its quantitative determination is necessary. Does he question the composition of the official "small orange-coloured crystals or crystalline masses"? The solubilities and volatility guarantee all necessary purity.

Arsenious Acid.—See *Acidum Arseniosum.*

Asafetida.—"In the spelling of this word there is somewhat of the 'straining at a gnat' (*sic*). In MURRAY'S 'New English Dictionary' it is spelt asafœtida, and there are more instances given of the use of 'œ' than 'e,' and if this return to the original Latin spelling were carried out logically, a very large number of both Latin and English words would have to be altered. The question of classically correct spelling is a very vexed one, and it is wiser to follow general usage as a rule, rather than pedantry." P.J. LX, 391. "The spelling of the name differs from that in the preceding edition, but from the interesting paper read before the British Pharmaceutical Conference at Glasgow [Y.B.P. 1897, 351–356] there appears to be convincing evidence in favour of asafetida, since both the Right Hon. FRIEDRICH MAX MÜLLER and Dr. MURRAY, the Editor of the 'New English Dictionary,' agree in saying that it is the proper method. Dr. MURRAY expresses his sorrow that he adopted the spelling asafœtida in the earlier portion of his dictionary, in the later parts he writes fetid." DRUCE, B. & C. D. XXXIII, 671. In a letter to the REPORTER, dated Oxford, 6th September, 1897, Dr. MURRAY says "we will correct to *Asafetida* in our plates."

DIETERICH, C. & D. LIII, 130, prefers his own procedure in applying the umbelliferone test (see *Ammoniacum*), and would exclude the official "tears" because less rich than the "block" asafetida in essential oil. He supports the official maximum of ash, 10 per cent., but would allow a sample to pass if containing not less than 50 per cent. of matter soluble in alcohol (90 per cent.) instead of the official minimum of 65 per cent. British pharmacists will probably not agree with DIETERICH, either as regards the low 50 per cent. limit or in preferring the agglutinated to the separate tears. Will authorities, after making any necessary experiments, please publish their views?

Ash.— For variations in the proportions of ash yielded by different parts of a leaf, see *Belladonnæ Folia*, *Digitalis Folia* and *Senna*. For the ash-yield of many drugs, see the respective drug-names, also *Pulveres.*

Atropina.—JOWETT, Y.B.P. 1898, 429, usefully adds to our knowledge of atropine. He confirms the official melting-point (115·5° C.) and the requirement of freedom from ash on ignition, but would slightly vary the official directions for producing the aurichloride, adding its melting-point (137° C.), and would state that atropine is neither dextro-rotatory nor lævo-rotatory in order to show freedom from hyoscyamine or scopolamine. With these additions, the official colour test with fuming nitric acid and potash will, he thinks, become unnecessary. See also *Hyoscinæ Hydrobromidum.*

Atropinæ Sulphas.—JOWETT, *loc. cit.*, respecting the official melting-point (183° C.), draws attention to the figures given by WILL (196° C.), HESSE (180°–181° C.), and MERCK (189°–191° C.), and states that an optically inactive specimen which he himself prepared from pure atropine melted at 190° C. What should be the melting point of a satisfactory commercial atropine sulphate?

Aurantii Cortex, Recens et Siccatus.—DRUCE, Y.B.P. 1898, 459, in reference to the botanical definition, "Citrus Aurantium, var. Bigaradia, *Hook. f.*," would omit the words "var. Bigaradia," thus making the official bitter orange the typical orange and the ordinary sweet orange the variety, LINNÆUS having in fact given the sweet orange as the "variety." HOLMES (through the REPORTER) admits the latter statement, but remarks that "this is one of the cases in which some concession must be made to usage. The sweet orange has become *the* orange of commerce, so that to make the bitter orange the type of the species would only be confusing. The bitter orange is known in France as the Bigarade, the sweet as the *orange de Portugal.* Every pharmacist knows that Oil of Orange is imported as *Essence de Portugal*, while Oil of Neroli, from the flowers of the bitter orange, is termed Ol. Neroli (Bigarade)." Again DRUCE, B. & C. D. XXXIII. 598: "It will be observed that the botanical authority for C. Aurantium is omitted.' Again HOLMES, MS.: "DRUCE must surely be aware that it is not necessary to write 'C. Aurantium, *Hook. f.*, var. Bigaradia, *Hook. f.*' when the same botanist is the authority for the whole of the name." See also under *Infusum Gentianæ Compositum.*

Balsama Peruvianum et Tolutanum.—"The generic name *Toluifera* of LINNÆUS' 'Species Plantarum' of 1753 (which he also used in the 'Materia Medica' of 1749 and his 'Genera' of 1742), has precedence over *Myroxylon*, which appears to have been established in 1781 by the younger LINNÆUS in his Supplement. I would suggest the name *Toluifera Pereiræ*, 'Baillon Hist. Plantes,' vol. ii. (1869), p. 383, and *Toluifera Balsamum*, 'Linn. Sp. Pl.,' p. 384 (1753), for the plants yielding Peru and Tolu balsam." DRUCE, Y.B.P. 1898, 459. HOLMES replies (through the REPORTER): "This cannot be done, since the genus *Toluifera* was imperfectly described, the fruit being unknown even in 1781, when the younger LINNÆUS published the genus *Myroxylon* in complete detail, including the fruit (Linn. 'Sp. Plant. Suppl.'

p. 341, No. 1396). The imperfectly characterised genus *Toluifera* therefore, when the fruit was discovered later on, of necessity fell under the genus *Myroxylon*. The generic name *Myroxylon* has been in general use for 100 years, and for more than fifty years in the well-known and universally used DE CANDOLLE'S *Prodromus*. The name *Myroxylon* is actually earlier (1776) than *Toluifera*, but was at first applied by G. FORSTER to a genus which he subsequently (1786) in his '*Fl. Aust. Ins. Prodromus*,' p. 72, No. 380, altered to *Xylosma*, remarking, 'Nomen mutavi ne confundatur Myroxylo, MURRAY, *Syst. Veg.* p. 395, No. 1396 (1784), quod Balsamum Peruvianum fundit.' It was therefore accepted even at that date that *Myroxylon* was the correct name for the genus yielding Peruvian balsam."

DIETERICH, C. & D. LIII, 129, remarks, respecting Balsam of Peru: "Compared with the German 'Arzneibuch' the *British Pharmacopœia* exhibits a marked advance in its requirements for this balsam, as it insists upon a certain proportion of cinnamein and specific saponification-number for that constituent. The qualitative tests might be left out of the next edition, as they are totally unreliable, and do not necessarily distinguish a true balsam of Peru. Instead of these qualitative tests I would suggest that the next edition should provide for determination of the acid, ester, and saponification numbers; and the amount of resin-ester, as well as cinnamein, should also be determined; but it would be advisable to exclude the saponification-number of the cinnamein, which is superfluous. It is not possible to define briefly the methods of determining the factors recommended, but I have gone fully into the matter in the paper already mentioned." (The paper here alluded to was a criticism of the German 'Arzneibuch,' *Pharmaceutische Centralhalle*, 1898, No. 19.) Respecting Balsam of Tolu, DIETERICH, *op. cit.* p. 130, observes: "A commencement has been made with quantitative methods, in the *British Pharmacopœia*, by giving a superficial determination of the saponification-number. Here I would also propose that the acid-number should be added, and that both figures should be determined by exact methods." His own view is that 1 gramme in alcoholic solution titrated with decinormal alcoholic potash solution should require 20 to 28 c.c. of the latter for neutralisation (corresponding to acid-number 112 to 115).

SPILSBURY, B. & C. D. XXXIV, 658, considered that the official instructions for testing Balsam of Tolu were somewhat indefinite; while the C. & D. Diary 1899, 499, states that "a little more exactness in the testing is desirable."

DIETERICH'S advice respecting Balsam of Peru is evidently founded on his experiments published in the *Ber. deut. Pharm. Ges.* 1897, 437, abstracted as follows in the P.J. LX, 184. He "obtained authentic samples of Peru balsam from Honduras, which represent the pure natural product of the tree. The author distinguishes three qualities of the product, representing the first, second, and third flow respectively, mixed with a few traces of bark. The three varieties differ from the commercial products by being much thicker, also much clearer and of darker colour, and having a more intense balsamic odour. The author contradicts the usual supposition that the same tree furnishes balsam of the same quality,

since the three samples examined showed different ester-numbers. The balsams examined furnished 77 per cent. of aromatic bodies (cinnamein, &c.), and only 13 per cent. of resin-ester, while the commercial products never have more than 65 to 75 per cent. of aromatic substances. The proportion of cinnamein differs to the same extent, and the resin insoluble in ether was found to be 4·38 per cent., or 1·5 to 3 per cent. more than those of the commercial products. On this basis a balsam having less than 65 per cent. of aromatic substances and more than 28 per cent. of resinous matter should be considered as doubtful in quality." See also DIETERICH'S paper on "Examination of Resins," in *Ber. deut. Pharm. Ges.* VI, 247, abstracted in *Journ. Chem. Soc.*, LIV, Pt. 2, 58; and as to the acidity figure, see a controversy between DIETERICH and FAHRION, abstracted in *Journ. Chem. Soc.*, LIV, Pt. 2, 466.

The results of DIETERICH are not quite in accord with those of GEHE, P.J. LIV, 1124. Before further standards can be accepted for the *British Pharmacopœia*, analyses of original and of commercial samples should be made by different observers. The whole subject of these two balsams needs revision, both general and as applied to pharmacy.

Belladonnæ Folia.—PUCKNER, A.J.P. LXX, 350, and P.J. LXI, 97, gives a modification of KELLER'S method of assay for alkaloids. HOCKAUF, B. & C. D. XXXIII, 597, finds from 10·5 to 15 per cent. of ash in belladonna leaves. DIETERICH, C. & D. LIII, 553, shows that the siftings of a ground parcel of belladonna leaves may yield varying percentages of ash unless all the siftings are mixed. Thus, the powder of siftings through the sieve of 8 meshes per centimetre yielded 13·85 per cent., while that which passed through the sieve of 65 meshes yielded 17·36 per cent. See also under *Digitalis Folia* and *Senna*. Results obtained with British drugs should be published. See also *Tinctura Belladonnæ*.

Belladonnæ Radix.—HOCKAUF, B. & C. D. XXXIII, 597, finds from 0·3 to 13·7 per cent. of ash. Results by others should be recorded. See also *Tinctura Belladonnæ*.

Benzoinum.—DUNLOP, P.J. LIX, 140, EVANS, P.J. LX, 507, and others desire an official limit, say not exceeding 10 per cent., for the proportion of bark, &c., insoluble in alcohol (90 per cent.). For official use practically no such insoluble matter is permissible, benzoin must be "almost entirely soluble." Until it is shown that the bark, &c., has parted with harmful soluble matter to the alcohol in preparing the official compound tincture, benzoin containing the usual varying proportions of bark (1 to 30 per cent.) may be employed, but allowance must of course be made for the insoluble matter, so that 1 pint of the official tincture shall be prepared from 2 ounces of *benzoin*, and not from 2 ounces of benzoin and bark. This being understood, it is submitted that a case has scarcely been made out for the exclusion of Sumatra benzoin from the next *Pharmacopœia*. DIETERICH, C. & D. LIII, 791, goes farther. "I consider it absolutely necessary that in the next edition of the *British Pharmacopœia* separate descriptions and analyses of both the Siam and Sumatra

benzoins should be provided if both kinds are admitted . . . the acid, ester, and saponification numbers, according to my convenient and expeditious methods . . . are means of identification." Considering that benzoin is in the *Pharmacopœia* for medical reasons, and what those reasons are, it is questionable whether British pharmacists should be tied down to the conditions and standards desired by DIETERICH, or that they should, as regards the use of benzoin for other than medicinal purposes, be tied down even to the high standards of the *British Pharmacopœia.* The removal of the 1 to 30 per cent. of bark fragments from benzoin is necessary, indeed inevitable, in fitting benzoin for the medicinal tincture; it is quite unnecessary, indeed scarcely practicable, to remove that 1 to 30 per cent. of bark to fit benzoin for sale to the public, or to set up a specified percentage of insoluble matter as a limit.

Bismuthi Carbonas.—The amount of bismuth in this and the other official compounds is to be ascertained by conversion into sulphide, which is to be "rapidly washed . . . and quickly dried." These are usual precautions, and, as is well known, are necessitated by the liability of free sulphur being weighed in with the sulphide. Such undoubted authorities as D. HOWARD, C. & D. LII, 674, and MERCK, C. & D. LIII, 348, consider that differences by the oxide or ignition method (see *Bismuthi Oxidum*) are "much smaller than those occurring in the sulphide method." This stricter method may well, therefore, be accorded the preference, for by it "a precise and rapid result is obtained upon which reliance can be placed."

A maker of oxycarbonate free from nitrate would like to see the official allowance of "not more than the slightest reactions with the tests for nitrate" removed. P.J. LX, 502.

Bismuthi Oxidum.—The ordinary method of checking the purity of a weighed quantity of one compound by converting it into another, which should have equivalent weight, is applied in the case of the official bismuth oxide by converting into sulphide; with the disadvantage alluded to in a previous paragraph. The quantitative oxide method is also included, that is to say, as regards bismuthi oxidum "heated to incipient redness it is scarcely diminished in weight." Experimental demonstration of some means of avoiding, or at least still further minimising, the disadvantage attending the sulphide method, or of converting the oxide into a compound other than the sulphide, would be desirable. Perhaps the separation of metallic bismuth by the reducing action of formaldehyde solution, as suggested by VANINO and TREUBERT, *Ber.* 1898, XXXI, 1303, abstracted in *Journ. Chem. Soc.* LXXIV, Pt. 2, 461, would be superior to either the sulphide or oxide method for each of the official salts? Here is an opportunity for research in analytical chemistry applied to the *Pharmacopœia.*

Bismuthi Salicylas.—D. L. HOWARD, Y.B.P. 1898, 472, recorded some partially worked-out experiments which seemed to show that bismuth salicylate might yield salicylic acid to cold alcohol and yet not neces-

sarily contain free salicylic acid. Perhaps the strength of the alcohol may have some influence. See "Bismutum salicylicum," in the *Pharmacopœia Helvetica*. The experiments will doubtless be completed. MERCK points out that 1 gramme of bismuth salicylate should be stated, officially, to yield not simply "0·7 gramme of bismuth sulphide" but 0·68 to 0·7.

Bismuthi Subnitras.—A.J.P. LXXI, 409, states as follows: "In an article on the composition and tests for bismuth subnitrate, THOMS (in *Ber. d. deutschen Pharm. Ges.*, 1898, Heft 4) says that according to the amount of water employed and the temperature at which the salt is precipitated, as also according to the temperature at which the preparation is dried, does it consist of the following products in varying proportions:— $Bi(OH)(ONO_2)_2$; $BiO(ONO_2)$; $BiO(OH)$; and water." The REPORTER suggests that a skilled worker should obtain samples from British makers, and, after removal of adherent moisture by appropriate means, ascertain the loss on heating to incipient redness, and should publish the results, with a recommendation as to allowable limits in the percentage weight of the residual oxide. For the purposes of the *Pharmacopœia* it is not imperative to give a chemical formula for such a substance as bismuth subnitrate; but ALTAN, of Bucharest, has endeavoured to do something in this direction, using THOMS' method of estimating the nitric radical, and he suggests the following formula: $(BiONO_3,H_2O)_4,BiO(OH)$. *Montreal Pharm. Journ.* IX, 357. MERCK, C. & D. LIII, 348, emphasises, under *Bismuthi Subnitras*, what he has already stated (see *Bismuthi Carbonas*) respecting the weak point of the quantitative sulphur method.

Boraæ.—MERCK, C. & D. LIII, 348, pleads for a little latitude as regards the official quantitative requirements. Some pharmacist should report on the strength of a series of commercial samples.

Botanical Nomenclature.—See *Nomenclature, Botanical.*

Buchu Folia.—Surface "somewhat warty." B.P., p. 57. "The term warty is scarcely applicable to the leaves, as there are no warts present on them." P.J. LX, 391. Does "somewhat warty" necessarily mean having actual warts?

Buckthorn Bark.—See under *Alnus.*

Cephaëline.—See under *Ipecacuanhæ Radix.*

Caffeina.—"Caffeine is stated to lose 8·49 per cent. of water at 100°. I have never known it to lose the last trace of hydration at that temperature."—D. HOWARD, C. & D. LII, 675. Would the critic please state a figure for "the last trace," and if it is any important quantity would he please state the temperature at which caffeine will lose the trace without injury to the anhydrous residue?

Caffeinæ Citras.—HOSEASON, in the English journals of pharmacy for November 18 and 19, 1898, considers that alkaloids and their salts should

answer to suitable volumetric tests. Would he please state what volumetric test would be suitable for caffeine and caffeine citrate?

Caffeinæ Citras Effervescens.—"While the *Pharmacopœia* does not profess to be a *vade mecum* for the manufacturing chemist, and leaves much to 'careful manipulation' in utensils 'of suitable form,' we question if this [official process] will give as satisfactory an effervescent citrate of caffeine [*sic*] as the process described in the C. & D. Diary 1897, 274, or the 1898 Diary, 493 (*b*)." Thus says the C. & D. LII, 613, 16 April 1898.

Calabar Bean.—See under *Extractum Physostigmatis.*

Calcii Carbonas Præcipitatus.— COULL, B. & C. D. XXXIV, 787, was much disappointed to find that such words were now made masculine. LEECH, *Med. Chron.*, April and May 1898, remarks: "Hitherto words ending in 'as,' such as carbonas, tartras, &c., have been regarded in the English *Pharmacopœia* as feminine, while on the Continent and in America they are made masculine. The English *Pharmacopœia* is now brought into line with all other Pharmacopœias." See also the very thorough treatment of the whole subject by INCE, P.J. 3rd ser. XX, 871.

Calcii Hypophosphis.—JOWETT has added considerably to our knowledge of the methods of assaying hypophosphites. Y.B.P. 1898, 409–423. "In the method I propose, the impurities are first removed by lead acetate, lead phosphite and other impurities being insoluble in water. The excess of lead is then removed by hydrogen sulphide, and the filtrate containing the hypophosphite completely oxidised to phosphate, which is determined either gravimetrically or volumetrically by the usual methods of analysis. . . . The method of analysis has to be slightly modified for the calcium salt on account of the insoluble calcium phosphate formed. If weighed as $Mg_2P_2O_7$, the best method is to proceed as with the sodium salt, then remove the lead and calcium as sulphate by precipitating with dilute sulphuric acid and adding alcohol. The further operations are the same as with the sodium salt. A better method is to determine volumetrically by uranium acetate, following the usual precaution observed in the presence of calcium, and carefully standardising the solution against pure calcium hypophosphite. Good results were obtained by both of these methods on the pure salt." Of 5 commercial samples of calcium hypophosphite examined, 2 English showed 97·50 and 98·18 per cent. of pure salt respectively, 3 American yielding 97·64, 99·37, and 99·61. The official figures for solubility are 1 in 8 of cold water. JOWETT shows that 1 part of an absolutely pure salt will dissolve in 6·43 parts of water at 20° C; but that commercial samples of even the highest degree of purity required the official proportions of 8 times their weight of water. There appears to be room still for an investigation having for its object the adjustment of medical requirements with manufacturing and reasonably economical possibilities in relation to the medicinal hypophosphites. The C. & D. Diary 1899, p. 500, rightly notes that "The B. P. method of testing with permanganate reckons in any phosphite as hypophosphite, thus giving high

results, but the lead-test limits this impurity." As JOWETT has shown, however, a salt soluble in the official 8 parts of water is practically free from phosphite.

Calcii Phosphas.—DOBBIN, B. & C. D. XXXIV, 809, points to an official inconsistency in treating magnesium as an impurity and yet allowing the use of calcium phosphate made from bone ash. The requirement of absence of magnesium was only adopted after many commercial samples had been examined and no magnesium found. The REPORTER suggests that bone ash as a direct source of medicinal calcium phosphate be omitted from the next *Pharmacopœia*, due inquiry having resulted in the conclusion that the official article is rarely if ever obtained from bone ash. It is prepared by interaction of calcium chloride and sodium phosphate.

Calumbæ Radix.—HOCKAUF, B. & C. D. XXXIII, 597, reports the ash-yield at, in round numbers, $5\frac{1}{2}$ to $8\frac{1}{2}$ per cent. Other observers should record results obtained from different parcels.

Cambogia, "from Garcinia Hanburii," after DANIEL HANBURY. DRUCE, B. & C. D. XXXIII, 672, points out that the original spelling by HOOKER, *Journ. Linn. Soc.* XIV, 487, is *Hanburyi*, as also seen in the 'Kew Index.' HOLMES replies (through the REPORTER) that the official form is the more classical, and is in accordance with DE CANDOLLE'S and SPRENGEL'S principles, and much to the point adds, "there is also a genus *Hanburia*, in which y gives place to i."

The official percentage of ash is 3. WOOLSEY, A.J.P. LXX, 446, found from 3 to 4 per cent. Other observers should publish any percentages they have obtained or may obtain.

Camphora.—"The illustration of the plant . . . . is inferior to either BERG'S or KOEHLER'S." P.J. LX, 392.

Cannabis Indica.—MAIR, C. & D. LIII, 168, questions the accuracy of the official statement that the leaves and bracts bear external "oleo-resin" glands—quoting PRAIN as obtaining only "a substance that oxidises into an ordinary resin as a fixed oil does." The latter remark suggests further research as desirable.

Cantharidin.—See under *Cantharis.*

Cantharis.—In 1883 DIETRICH, a foreign manufacturer of plaster, &c., suggested that cantharidin, the active principle of cantharides, should be used in preparing a cantharidal collodion, plaster, oil and ointment; one part of cantharidin for every 200 of cantharides: see P.J. 3rd ser. XIV, 169. In 1898, P.J. LX, 255, GREENISH and WILSON carefully determined the proportion of cantharidin in the respective preparations of the *British Pharmacopœia* by an improved method of assay, and then devised formulæ for preparations of similar potency, but made with cantharidin itself. Thus *Liquor Epispasticus*, 1 gramme of cantharidin in 300 cubic centimetres, while 40 c.c. of this *liquor* with 1 gramme of pyroxylin afforded

a *Collodium Vesicans*; *Tinctura Cantharidis*, 1 gramme of cantharidin in 10,000 c.c.; *Acetum Cantharidis*, 1 gramme in 2000 c.c.; *Unguentum Cantharidis*, 1 gramme in 3000 c.c.; *Emplastrum Cantharidis*, 1 gramme in 1000 grammes. It would seem that these definite preparations should in due time supersede those now official; cantharidin, which might, obviously, be obtained from any variety of blistering beetle, and which admits of satisfactory description and definition, being also officially recognised. The authors offer these improved and definite preparations "for the first *British Pharmacopœia* of the next century." Meanwhile some pharmacists should make them, and some pharmacologists try them, as extra-official preparations, a few workers in each of these two classes publishing their results.

Caoutchouc.—Amongst the official characters are "brownish-black externally, and mottled with a pale tint internally." P.J. LX, 392, remarks: "The term mottled is scarcely characteristic of Para rubber, which gradually shades off into a paler tint internally." The C. & D. Diary 1899, 500, states that "some rubber is milk white internally. Little of it is 'mottled.'" DRUCE, B. & C. D. XXXIII, 598, says that the shading in the best Para rubber is gradual. The REPORTER agrees that "shading to a paler tint internally" would be a more apt description.

Capsici Fructus.—DRUCE, B. & C. D. XXXIII, 675, comments as follows: "Instead of *Capsicum fastigiatum*, Blume [B. P. 1885] Bijdr. Ind. 705 (1825), it is now *C. minimum*, Roxb. Hort. Bengal, 17 (1814). But this is not the *C. minimum* of MILLER'S Gard. Dict. of 1768, which, according to the 'Kew Index,' is *C. baccatum* and *C. microcarpum*. There is also another *C. minimum* of BLANCO, Fl. Filip., ed. i, 133. FLÜCKIGER and HANBURY say that FARR has ascertained that the official plant is identical with *C. frutescens*, Linn. Sp. Pl. 189 (1753), and if this be so, this is the name the plant should bear even if the plant of the 'Hortus Cliffortianus' be different." HOLMES thus replies (through the REPORTER): "The evidence goes to show that the Chillies of commerce are not produced by *C. frutescens*, Linn., as Mr. DRUCE suggests, for in the Sp. Pl. (1753), p. 189, No. 2, LINNÆUS gives a synonym, 'Capo Molago,' and refers to RHEEDE, Mal. (2), p. 109, tab. 56. If Mr. DRUCE had carried his search farther he would have found that RHEEDE describes his 'Capo Molago' as follows: 'Fructus *oblongo-rotundi* sunt, primum virides, dein cum maturi in totum *aurco-flavi seu crocei*,' and in a note under tab. 56, he adds: 'Quod hic ab auctoribus nostris sub nomine Capo Molago est Piper Indicum siliqua *flava vel aurea*, Casp. Bauh. in Pinace.' Obviously, therefore, the *C. frutescens* of LINNÆUS has a yellow or deep orange-coloured fruit, not a red one as in *C. minimum*, and cannot be the source of the Chillies of commerce. Moreover, ROXBURGH, in Fl. Ind. I, p. 576, draws a clear distinction between his *C. minimum* and the *C frutescens*, Willd. (= *C. frutescens*, Linn.), stating that the plant has ovate lanceolate leaves, peduncles *single*, and fruits *yellow* and *bright orange*, whilst his *C. minimum* has leaves ovate-cordate, peduncles *in pairs*, fruit

subcylindrical acute, and calyces with subulate spreading teeth; and distinctly states that this plant is the East Indian Bird Chillies, or Cayenne Pepper Capsicum. BLANCO'S plant referred to by Mr. DRUCE, Flo. Filip. I, tab. 47, shows an *obtuse* fruit, with leaves lanceolate, but not cordate, and calyx-teeth not spreading, but peduncles fastigiate. *C. fastigiatum*, Blume, is also identified by HANBURY (Pharmacographia, 2nd ed., p. 452) with ROXBURGH'S *C. minimum*. There can be no doubt therefore about the official name *Capsicum minimum* being correct."

The foregoing reply answers the criticism in the C. & D. Diary 1899, 500.

Carbonis Bisulphidum.—Officially it is required to be free from sulphur. MERCK, C. & D. LIII, 348, finds "traces" to be invariably present.

Cardamomi Semina.—DRUCE, B. & C.D. XXX, 675, in relation to the official source, "Elettaria Cardamomum, *Maton*," remarks as follows: "There appears to be an earlier generic name, *i.e.* that of Cardamomum given by NORONHA in 'Verh. Batav. Gen.' v. (1790) Ed. i, Art. iv, 2, and this was taken up by SALISBURY (a year after MATON published Elettaria) in 'Trans. Hort. Soc.' i (1812), p. 282, where he called the *official* plant *Cardamomum officinale*." HOLMES (through the REPORTER) replies: "DRUCE in this case, as in most of the others, does not appear to have referred to the works quoted, but only to the Kew Index—which is merely a sign-post to direct to other sources of information. The name *Cardamomum* given by NORONHA is merely a name, without any description, and, as a 'nomen nudum,' is not entitled to recognition. NORONHA'S name was *not* taken up by SALISBURY, who had a habit of giving names at will, and of changing old ones without any good reason. SALISBURY writes: '*Cardamomum officinale* MSS.,' thereby indicating it was his own name and not NORONHA'S. This he had no right to give, since MATON'S name is a year earlier, and MATON explains the characters of his new genus Elettaria, and points out how it differs from the genus *Amomum* in which WHITE had placed the plant. *Elettaria* is therefore the earliest generic name with a sufficient description."

Caryophyllum.—DRUCE, B. & C. D. XXXIII, 675, points out that no microscopic test is given for the detection of allspice and clove stalk, and fruits . . . in the powder of cloves. Is this criticism relevant? The *Pharmacopœia* recognises and describes commercial cloves, not the commercial powder of cloves. When necessary, pharmacists must use "Cloves, in powder." There is virtue in the comma. This also will explain the comment in P.J. LX, 392.

Cascara Sagrada.—MOSS, C. & D. LII, 892, would vary, as follows, the official description as to length, breadth and thickness of the bark as it occurs in commerce. "In pieces from 1 inch to 2 feet long, $\frac{1}{2}$ inch to 2 inches or more wide, and not more than $\frac{1}{16}$ inch thick." See also under *Aloinum* and *Cascarilla*.

Cascarilla.—The name was "Cascarillæ *Cortex*" in B.P. 1885. "The object of leaving out the word *cortex* in the case of this drug only is not

clear, and is not consistent with the alterations made elsewhere, as under jaborandi." P.J. LX, 392. "There appears to be no valid reason for changing the name [C. *Cortex*] of the previous edition." DRUCE, B. & C D. XXXIII, 675. "The present B.P. has dropped the designation 'cortex' from the title for much the same reason that 'bark' is an unnecessary appellation to cascara sagrada." C. & D. Diary 1899, 501. "It is wrong to speak of 'cascara bark,' or 'cascara sagrada bark,' because 'cascara' means bark." C. & D. Diary 1899, 501. "Cascarilla is the diminutive of the Spanish *Cascara*, bark": RANSOM, assisted in some points of difficulty by DRUCE and HOLMES, P.J. LXII, 490. It will be seen, therefore, that the occurrence of the simple name "Cascarilla" on the lower half of p. 69 of the *Pharmacopœia* is now consistent with the occurrence of the name "Cascara Sagrada" on the upper half. In this consistency DRUCE will find the valid reason for change.

DIETERICH, C. & D. Diary 1899, 501, finds Cascarilla to vary greatly in extractive—4·8 to 13·25 per cent.

The ash of Cascarilla is said by HOCKAUF, B. & C. D. XXXIII, 597, to vary from 8·0 to 24·6 per cent. Different observers should incinerate different parcels in different years and publish the results.

Catechin.—See *Catechu.*

Catechu.—"The B.P. is peculiar in applying the name 'catechu' to this product: all other Pharmacopœias recognise true catechu (cutch or black catechu, also called Pegu Catechu) obtained from *Acacia Catechu*, which is also known commercially as *catechu*, while the B.P. article is known commercially as *gambier*. The Pharmacopœia description does not sufficiently distinguish between the two kinds." C. & D. Diary 1899, 501.

The MEDICAL COUNCIL has never desired to distinguish between the two kinds, has never regarded either of these two botanical, geographical, or commercial varieties of *tree-juice*—for that is what the word *catechu* means—as specially *true* catechu. Medically they are identical, and that is the all-important official consideration, while chemical investigation supports medical experience. The first *British Pharmacopœia* favoured botany and commerce by recognising both kinds under the not unexceptionable names *Catechu Nigrum* and *Catechu Pallidum*, but unsatisfactorily enough, left pharmacists to use whichever they pleased in making *Infusum*, *Pulvis Compositus* or *Tinctura*. The compilers of the second *British Pharmacopœia* dismissed the darker and retained *Catechu Pallidum*. (See also P.J. 2nd ser. V, 426.) There being then only one official catechu, the word *Pallidum* became superfluous; hence the single word *Catechu* of the third and fourth *British Pharmacopœias*. In answer to the critic in the C. & D. Diary 1899, 501, "*Gambier*, Gambier" would scarcely be likely to be the heading of a descriptive article in a *British Pharmacopœia* containing also, as now, an article headed "*Catechu*, Catechu."

Could not pharmacology resolve the irritating pharmaceutical difficulties attending the official recognition of catechus and kinos by investi-

gating the medicinal action of *mimotannic acid* and *catechin*, the definite active principles, so far as we know, of these natural astringent extracts?

As regards the name of the plant, *Uncaria Gambier*, Roxb., officially recognised as yielding catechu, DRUCE, P.J. LXI, 202, remarks as follows: "In this case there is an earlier name which was given to the genus *Catechu* by AUBLET in the 'Histoire des Plantes de la Guiane Française' of 1775, p. 177, t. 68. OTTO KUNZE, in the 'Revisio Generum Plantarum,' vol. i, p. 201, took up AUBLET'S genus, but, as in the case of *Vouacapoua*, altered the spelling to *Uruparia*. SCHREBER'S genus *Uncaria* only dates from the 'Genera' of 1789. Assuming that AUBLET'S publication is valid, our plant should be *Ourouparia Gambier*, Roxburgh (= *O. Gambir*, Baill, 'Hist. Plantes,' vol. vii, p. 350)." HOLMES thus replies (through the REPORTER): "The genus *Ourouparia* of AUBLET was imperfectly described, the fruit being unknown to that author. The name *Ourouparia* is also objectionable for the reason given under *Vouacapoua* (vide *Araroba*). Mr. DRUCE'S proposal to adopt *Ourouparia Gambier* (Roxburgh) is misleading, since the name *Ourouparia* is not used by ROXBURGH, and the plant would not be found in his work under that name. If used at all it should be *Ourouparia Gambir*, Baill., 'Hist. des Plantes,' vol. vii, p. 350."

As to ash, the official requirement is not more than 5 per cent. HOCKAUF, B. &. C. D. XXXIII, 597, found as much as 5·9. This looks as if the figure in the German Pharmacopœia were the more correct, namely, 6 per cent. More experiments by pharmacists should be recorded.

Cephaëline.—See under *Extractum Ipecacuanhæ Liquidum* and *Ipecacuanhæ Radix.*

Cera Alba et Cera Flava.—PARRY would put the minimum specific gravity at 0·958 rather than 0·960 (B.P.), but DIETERICH gives the minimum as 0·962 for white beeswax and 0·960 for yellow beeswax. PARRY would put the minimum melting-point at 61° C. rather than 62·5 (B.P.); DIETERICH gives 63·5. C. & D. Diary 1899, 502.

Cetaceum.—PARRY would put the minimum melting-point at 43° C. rather than 46 (B.P.). The U.S.P. gives no minimum, but states "melts near 50° C., and congeals near 45." German Pharmacopœia, "from 45° to 50° C." B.P., 46° to 50° C.

HIRSCHSOHN, P.J. LIX, 6, proposes a petroleum ether and copper acetate method of analysis of *Cetaceum*, which, he says, will detect 2 per cent. of stearic acid in spermaceti. Such a test, if confirmed, would be welcome.

Chemical and Galenical Pharmacy.—See under *Standardisation.*

Chemical Notation.—See under *Acidum Gallicum* and *Phenacetinum.*

Chips, Shavings, Raspings.—See under *Cinchonæ Rubræ Cortex*, *Guaiaci Lignum*, *Hæmatoxyli Lignum*, *Pterocarpi Lignum*, *Pulveres*, *Quassiæ Lignum*, and *Sassafras.*

Chloral Hydras.— Respecting the official statement that after fusion it "begins to solidify at a temperature of about 120° F. (48·9° C.)," MERCK, C. & D. LIII, 348, says "even the purest kinds mostly solidify at a lower point."

Churchill's Liquor.—See under *Aitken's and Easton's Syrup.*

Chloroformum.—NEWMAN and RAMSAY, *Lancet*, January 23, 1897, having proposed treatment with lime as tending to ensure purity in chloroform, D. BROWN, P.J. LXI, 669, and B. & C. D. XXXIV, 808, shows that lime treatment hastens decomposition, and that decomposed chloroform cannot by lime be transformed into a pure anæsthetic.

Cimicifugæ Rhizoma.—DRUCE, P.J. LXI, 202, says that the botanical authority officially recognised, namely, ELLIOTT, "A Sketch of the Botany of South Carolina and Georgia," 1824, vol. ii, p. 16, was anticipated by NUTTALL, "Genera of North American Plants," 1818, vol. ii, p. 15. HOLMES (through the REPORTER) says that clearly NUTTALL has six years' priority of ELLIOTT, a priority not noticed by HANBURY in "Pharmacographia," or TRIMEN in "Medicinal Plants."

This rhizome needs chemical and pharmacological investigation.

Cinchona Preparations.—STOEDER, B. & C. D. XXXIV, 516, thinks that the attention given to the two tinctures in the *British Pharmacopœia* "is excessive in the presence of so many omissions." That is a matter of opinion. "The method for determining the alkaloids . . . is both troublesome and antiquated." The compilers would welcome a better. "As regards the tests for the purity of the precipitated alkaloids, they are about the same as those given in our own [Dutch] Pharmacopœia." That is comforting. HOSEASON, B. & C. D. XXXIV, 651, says: "The assay of the bark is identical with that of the B.P. 1885, and appears to be a thoroughly reliable method."

Cinchonæ Rubræ Cortex.—A writer in the C. & D. Diary 1899, 503, thinks that, considering the extraordinary variety of cinchonas, it is remarkable that the B. P. should recognise only one for the galenical preparations, but does not deny that this one is on the whole most constant in composition and supply, if not in the official quilled form, in shavings and similar forms which are just as good and indeed are used by manufacturers. The reply to this criticism is that retailers as well as manufacturers are quite at liberty to use "shavings and similar forms"; that the *Pharmacopœia* does not prevent anybody employing the bark in such forms; but that its compilers do not take the responsibility off the shoulders of those who produce, sell, buy or use such forms.

MORTIMER, P.J. LIX, 255, states that in carrying out the official analytical method he ventured to wash the final ammoniacal filtrate twice with chloroform, and on evaporating obtained 0·8 per cent. of residue of an alkaloidal nature, increasing the previous yield from 4·59 per cent.

to 5·39 per cent. Possibly he had not allowed the mixture, after the addition of the ammonia, to stand long enough.

The ash-limits for "cinchona" are given by HOCKAUF, B. & C. D. XXXIII, 597, at 1·8 to 6·0 per cent., the insoluble portion at 0 1 to 1·85.

Cocæ Folia.—Officially the leaves from Bolivia and from Peru are recognised, and both are referred to *Erythroxylum Coca*, Lam., "*and its varieties.*" DRUCE, B. & C. D. XXXIII, 676, remarks that "in the P.J. ser. 3, vol. xxii, p. 817, BURCK pointed out that the Bolivian plant was a distinct species, to which he gave the name *E. Bolivianum*," the inference obviously being that the official description is erroneous. BURCK, *op. cit.*, treats of a total of four varieties of Coca in cultivation. In the *Bulletin of Pharmacy*, December 1892, RUSBY writes as follows: "*Erythroxylon.* A number of distinct names have been recently proposed in pharmaceutical literature for the supposed species or varieties yielding the various commercial varieties of this drug. It does not, however, seem to me wise to adopt any of these names at the present time. The most careful investigations which I have been able to make concerning the Coca plant leave me entirely in doubt as to the botanical relations of the several known forms. In addition to this, the proposed names seem to have been selected without regard to any rules of nomenclature. I cannot, therefore, at the present time, do otherwise than refer all forms to the one species, *E. Coca*, Lam." In the P.A.P.A. XL, 211, RUSBY, in a paper on the botanical names of the U.S. Pharmacopœia, gives "*Erythroxylon.* From *Erythroxylon Coca*, Lam., Dict. ii, p. 393 (1786)." As regards the foregoing statements Sir WILLIAM THISELTON DYER, writing to the REPORTER, says, "I am entirely at one with Professor RUSBY in what he says as to *Erythroxylon*." The statements are also an answer to the similarly founded name-criticism of the P.J. LX, 345, 393, and 416. On page 393 is also the remark, "As a matter of fact the leaves of typical [note *typical*, REP.] *E. Coca*, Lam., are not obtainable in commerce." Officially the description is not limited to *typical* leaves, the words being "The dried leaves of Erythroxylon Coca, *Lam., and its varieties.*" Similar *finesse* is observable at foot of p. 416. The C. & D. Diary 1899, 503, makes a similar, though clearer, comment, and very fairly adds "*but its varieties are.*" The italics in some of the foregoing quotations are the REPORTER'S.

HOCKAUF, B. & C. D. XXXIII, 597, gives the limits of ash at 5·0 to 11 5; insoluble, 0·3 to 2·0.

Cocaina.—The official melting-point is 96° to 98° C. HOWARD, C. & D. LII, 675, says, "the latter is accurate, and a variation of more than one degree may indicate dangerous impurities." The official figures represented the best commercial cocaine at the time. No harm is known to have resulted from the employment of such cocaine. The melting-point of absolutely pure cocaine will probably be found to be between 96° and 98° C. HOSEASON, P.J. LXI, 530, thinks that such alkaloids and their salts "should answer to suitable volumetric tests." What tests?

The P.J. LX, 391, says, "Several tests are described, but the one

recommended by MACLAGAN, which gives the most useful indication of purity, is not mentioned." On the contrary, MACLAGAN'S test is fully described in the *Pharmacopœia*. The C. & D. Diary 1899, 503, suggests some (unnecessary) additional words to MACLAGAN'S test. From vigorous attacks in Germany MACLAGAN'S test has emerged scathless.

Cocainæ Hydrochloridum.—The C. & D. Diary 1899, 503, states that as the hydrous salt, $C_{17}H_{21}NO_4,HCl, 2H_2O$, occurs as "prismatic needles or prisms," and loses 9·5 per cent. of water on drying, it might, so far as official "characters" go, be mistaken for the salt officially described as anhydrous. Not so; for one of the official "characters" is that the official salt must not lose more than 1 per cent. on drying.

Codeina.—The *Pharmacopœia*, like most books, gives the solubility in water as 1 in 80. STOEDER, B. & C. D. XXXIV, 517, alludes to a single experiment in which 1 of codeine (he says codeine *phosphate*, but that is probably a slip of his pen) required 112 of water, and he forthwith states that 1 in 80 is incorrect. It is suggested that he himself should repeat his experiment, and on a fresh sample of codeine, or, better, on two or three different makers' codeine, and publish the results.

Colchici Cormus.—See under *Extractum Colchici Aceticum.*

Compound.—The medical signification of this word, when it forms part of the name of an official substance, is set forth under *Linimenta*, *Mistura Cretæ*, and *Trochisci.*

Constitutional Formulæ.—See under *Acidum Tartaricum.*

Copaiba.—In P.J. LXI, 202, and Y.B. P. 1898, 460, DRUCE writes thus respecting the official description of the plant yielding copaiba:—"The name of the genus of plants yielding our drug is given as *Copaifera*, which dates from the second edition of the 'Species Plantarum,' which was published at the end of 1762 or the beginning of 1763. In 1760, however, Jacquin in the 'Enumeratio systematica plantarum, quas in insulis Caribæis vicinaque Americes Continente detexit novas,' gave the name *Copaiva*. Should this be a valid publication the official plant will have to be called *Copaiva Landsdorfii*, Desf. in 'Mém. Mus. Par.,' vol. vii. (1821), p. 377. Among the other species yielding copaiba are *Copaiva officinalis*, Jacq. *l.c.*, p. 21 (1760); *Copaiva coriacea*, 'Mart. Reise Brasil.,' p. 285; *Copaiva guyanensis*, Desf. in 'Mém. Mus. Par.,' vol. vii. (1821), p. 376; *Copaiva multijuga*, Desf., *l.c.*, rests on rather uncertain identity, since it is said a fragmentary specimen only exists." In a letter to the REPORTER, DRUCE states that in the foregoing paragraph of his paper "On the Botanical Nomenclature of the *British Pharmacopœia*," the names of the authorities for *Copaiva coriacea*, *C. guyanensis* and *C. multijuga* ought to be enclosed in brackets, as the respective authors enumerated them in the genus *Copaifera* not *Copaiva.*

In the letter just mentioned DRUCE, in reply to a question from the

REPORTER, explains, as regards the species, that in the spelling *Landsdorfii* attributed to him the first *d* got in by mistake.

To the criticism HOLMES (through the REPORTER) replies :—" Jacquin's genus Copaiva (1760) is imperfectly described. In the work quoted by Mr. DRUCE, Jacquin gives, in the genus, *Petala* 5, *Calyx nullus*, but in a work he published three years later, 'Select. Stirp. Americ. Hist.' (1763), p. 133, tab. LXXXVI, he describes the corolla as having four parts, and figures 4 in his illustration, but says nothing about the seeds, not having seen the mature fruit. The description given by LINNÆUS, in Gen. Plant. 1767, p. 216, No. 542, is the first adequate description published, and was adopted by DE CANDOLLE in the Prodromus, Vol. II, p. 588; and the name *Copaifera* given by LINNÆUS has been used ever since in the classical works of BENTHAM and HOOKER, and MARTIUS'S Flora Brasiliensis. It has, therefore, the usage of 130 years."

DESFONTAINES, in the work quoted, gives the spelling of the word as *Lansdorfii* in the text and *Langsdorfii* in the lettering to a figure of the tree. FLÜCKIGER, corresponding with one of the sons of the botanist after whom the species is named, found that the family spelling of the name was *Langsdorff* (P.J., March 22, 1879, page 773). In a letter, dated December 6, 1897, addressed to the Editor of the *British Pharmacopœia*, by DYER, as a Botanical Referee, the latter says " I have looked at what DESFONTAINES wrote, and he gives the specific name as *Lansdorfii*, and so, according to botanical usage, it must remain. No one has any business to alter it. . . . Very likely the man's name was *Langsdorff*, but that does not affect the question." And again, Kew, January 3, 1898, " As to botanical names, the principle generally adopted in England is to give the name *exactly* as the author published it. And this is definitely prescribed in the Berlin code. A name is only a means of identification, and its philology is merely a matter of secondary importance. What is important is that its spelling should not fluctuate." The outcome is that the *Pharmacopœia*, in omitting the *g* and one *f* from what appears to be the family name of Baron Langsdorff, is following a strict and indispensable botanical rule, a rule necessary for the avoidance of confusion and misdirection in matters botanical.

Two colour tests for gurjun balsam in copaiba are official: the nitro-sulphuric affording " a transient violet," the aceto-nitric " a reddish or purple colour "—if gurjun balsam is present. HENDERSON, P.J. LXI, 645, mixed 1 part of gurjun balsam with 7 of copaiba. With the nitro-sulphuric test the mixture gave, after a minute or two, a fine violet which lasted for an hour; with the aceto-nitric test, applied two or three times, no colour, but with double the proportion of gurjun balsam a distinct purple after standing for an hour. From the official description of the first test he would omit the word " transient," to the description of the second he would add a time-limit.

DIETERICH, C. & D. LIII, 129, and *Pharmaceutische Centralhalle*, 1898, No. 19, would displace qualitative by quantitative tests, namely, the taking of at least the opticity and boiling-points of the separated essential oil. He admits that this procedure is already prescribed in the *British*

Pharmacopœia, but thinks that an exact method of isolating the oil should be added, forgetting that in the *Pharmacopœia* due analytical skill is assumed (*Preface*, p. xiv). Systematically to include details of practical chemistry in our medicine-book would, in the REPORTER'S opinion, be a cardinal mistake. In regard to gurjun balsam he would include the estimation of the acid and saponification numbers. He would exclude the Para and Maturin balsams altogether, and recognise only Maracaibo balsam. He says, "if this were done the quantitative determination would be far easier"!

There is still room for researches, by skilled pharmacists, on the chemical and physical methods for proving the purity or otherwise of copaiba from various sources, and of varying natural quality. But even of more importance would be a pharmacological investigation, or, if that be impracticable, a therapeutical investigation on the volatile and non-volatile portions of the various copaibas and of gurjun balsam. There are indications that the essential oils of these two balsams are identical. If this identity were proved therapeutically, the chemistry, physics and pharmacy of the subject would soon be settled satisfactorily.

Copper in Drugs.—STOEDER, B. & C. D. XXXIV, 516, once more draws attention to the possible presence of copper in oil of cajuput as being worthy of official recognition.

Cotton Seed Oil.—See under *Oleum Olivæ*.

Creosotum.—Creosote is a mixture of substances. From its mode of production, samples prepared at different times by different persons may be expected to vary in characters, but not to any important extent as regards its use in medicine. Specimens prepared and examined in July 1897 were freely soluble in glycerin and slightly lævorotatory. Specimens examined since the *Pharmacopœia* was published have been either non-rotatory or slightly dextrorotatory, and have behaved variably with glycerin. MOORE, *Montreal Pharmaceutical Journal*, IX, 384, says "Creosote which answers the test of the new pharmacopœia is perfectly miscible in glycerin (sp. gr. 1·260) up to the proportion of 1 part of creosote in 3 parts of glycerin, but on the addition of more glycerin the mixture turns milky until you reach the proportions of 1 of creosote and 10 of glycerin over and above which the creosote is soluble." In the "Corrigenda" inserted in the reprints of the *Pharmacopœia* from February, 1899, onwards, the word *glycerin* on page 89, line 28, is ordered to be omitted, and the words *to the left*, on page 90, ordered to be changed to *slightly to the right*. The modern creosote is prepared from beechwood, the older from Stockholm tar.

Crocus.—DRUCE, B. & C. D. XXXIII, 676, says, "The presence of Saffron in Dec. Aloes Co. and its omission from Pulv. Cretæ Arom. is difficult to explain. Its omission from the latter will prove a source of difficulty to the dispenser." The explanation is that saffron is growing in disfavour with medical practitioners. The stated difficulty to the dispenser is not yet apparent. See also under *Decoctum Aloes Compositum*, *Pulvis Cretæ Aromaticus* and *Tinctura Rhei Composita*.

For a process for "the determination of the colouring-matter of

saffron" *see* DOUZARD, P.J. LXI, 443 & 454; C. & D. LIII, 669; B. & C. D. XXXIV, 494. KRAEMER, P.J. LXI, 325, from A. J. P. LXX, 369, develops the sulphuric acid test for distinguishing between crocus, carthamus and calendula.

Cubebæ Fructus.—The P.J. LX, 393, says, "The words 'sometimes depressed at the base' might have been omitted, as this is a feature of small immature fruits." Does the critic desire that the indication of the presence of small immature fruits should be suppressed, or that their presence being immaterial the official allusion to them should be omitted, or that the absence of the words should insure the removal of the immature fruits from all parcels?

Cusso.—DRUCE, B. & C. D. XXXIII, 706; P.J. LXI, 202; C. & D. LIII, 311; Y.B.P. 1898, 460, gives data pointing to *Hagenia abyssinica*, as the name of the plant yielding Kousso, instead of the official name *Brayera anthelmintica*. HOLMES replies (through the REPORTER) as follows:—"The genus Hagenia of Gmelin and Willdenow was placed in the class Octandria and order Monogynia, whereas, according to Brayer and Kunth, it has 12–20 stamens and two styles, and, according to Hooker, has monœcious flowers, some being male and others female. The genus of Gmelin and Wildenow cannot, therefore, be considered to be a correct description of the plant (for only one species is known). The first adequate description is that given by Kunth, the only feature he had not noticed, viz. the sterile anthers of the female flowers, being mentioned by Hooker (*Journ. Bot.* II (1850), p. 380), who retained Kunth's name Brayera. This description can be referred to in Dict. Class. d'Histoire Naturelle, vol. ii, 1822, p. 501–2, in which Brayer's own description of the tree is quoted with Kunth's remarks. The name *Brayera anthelmintica* was adopted by De Candolle in the Prodromus in 1825."

Decoctum Aloes Compositum.—LEECH, *Medical Chronicle*, April and May, 1898, and P.J. LX, 445, remarks that "saffron was omitted until it was found that its absence produced a preparation which was more nauseous than heretofore, hence it was restored to the *Pharmacopœia*." A little pharmaceutical research would probably result in the discovery of some less costly mode of reducing the nauseous taste.

Digitalis Folia.—"The following observations made in 1898 by Messrs. CAESAR and LORETZ, of Halle, show that the changes adopted by the new B.P. are correct:—

	Digitoxin per cent.	
	Crude	Pure
Harz digitalis, wild, end of June	yielded 0·533	0·303
„ „ „ middle of July	„ 0·452	0·369
Thüringen „ „ „	„ 0·432	0·274
Harz „ „ beginning of August	„ 0·381	0·222
Two-year-old plants—		
A. Middle of June	„ 0·258	0·221
B. Ditto, experimentally cultivated, end of August	„ 0·171	0·107

From the middle of the flowering period to the end the digitoxin diminishes until only a trace is left." C. & D. Diary 1899, 267.

The foregoing results well illustrate the influence of season on the composition of plant juices, and warrant the inference that the official directions as to period of collection of digitalis leaves are justifiable. The proportion of digitoxin is a good guide for this purpose. But that digitoxin is the active principle or sole active principle of digitalis is not yet settled. Much work is being done on digitalis, and its pharmacology is year by year becoming less indefinite; but that much more must be done before the same reliance can be placed on digitalis principles as on those of opium and cinchona will be obvious on reading the following summary by KEBLER, A. J. P. LXXI, 190. "According to KILIANI (*Arch. der Pharm.*, 233, 311) the leaves of digitalis contain neither the so-called *Digitalin verum* nor digitonin, while KELLER (Ueber die Wertbestimmung von Drogen und galcnischen Präparaten. Diss. Zürich, 1897) states that *digitalin* and *digitonin* are present. M. CLOETTA has gone into this knotty problem, and finds that the leaves as well as the seed contain *digitonin*, *digitalin*, *digitoxin* and *colouring matter common to both.* He has not been able to establish the presence of *digitalein* in the leaves. The seed contains much more *digitalin* than *digitoxin*, while in the leaves the reverse is the case.—1898, *Arch. Exp. Pathol. u. Pharm.*, 41, 421."

The ash of digitalis varies from 7 to 10 per cent. HOCKAUF, *Zeitschrift d. allgem. Oest. Apoth. Ver.* 1898, p. 49. But if the drug-grinder passes one and the same parcel of ground digitalis leaves through different sieves the percentage of ash yielded by powder of one degree of fineness will differ from the percentage yielded by powder of another degree of fineness. Thus DIETERICH, C. & D. LIII, 553, found 11·58 per cent. of ash in the digitalis powder delivered from a sieve having sixty-five meshes per centimetre, but only 7·24 per cent. in the particles delivered from the sieve having eight meshes per centimetre. Moreover, the 7·24 parts of ash of the powder from the coarser sieve, contained 46·83 per cent. of potassium carbonate, the 11·58 parts of ash of the powder from the finer sieve contained only 22·24 per cent. of potassium carbonate. If the mineral constituent of a leaf thus varies, why not another of far greater medicinal importance? Clearly the whole of one parcel of a drug should not only be passed through the finest sieve employed by an operator, but the whole bulk of sifted powder should then be well mixed. Results obtained with the powdered digitalis leaf of British pharmacy should be published. See also *Belladonnæ Folia* and *Senna.*

Easton's Syrup.—See under *Aitken's and Easton's Syrup.*

Elaterinum, *Elaterium.*—LUNAN, B. & C. D. XXXIV, 787, to avoid the possibility of mistaking either of these two words for the other as between prescriber and dispenser, suggests that the name of the active principle be changed to *momordicinum.* Is there really any need for the change? Would not the liability to such mistakes, if it exists, be better avoided by supporting the tendency of physicians to prescribe elaterin

rather than elaterium? This might be done, so far as the next *Pharmacopœia* is concerned, by incorporating the official description of elaterium with that of elaterin, omitting the paragraphs on elaterium altogether.

Emetine.—See *Extractum Ipecacuanhæ Liquidum* and *Ipecacuanhæ Radix.*

Emodin.—See under *Aloinum.*

Emplastra.—See under *Oleum Olivæ.*

Emplastrum Belladonnæ.—Large numbers of samples of Belladonna Plasters, some made in Canada but nearly all of American manufacture, have been examined for proportion of alkaloid, the standard adopted, "0·5 per cent. of the alkaloids of Belladonna Root," being that of the *British Pharmacopœia.* Full details are given in the *Montreal Pharmaceutical Journal* for *September*, 1898, pages 300 to 303. See C. & D. Diary 1899, p. 264, for the following general results, and p. 499, for the statement that "enormous quantities of Hungarian scopola-root are used yearly as belladonna, especially in the manufacture of atropine and belladonna plasters." Fortunately the alkaloids of scopola-root do not appear to be greatly different pharmacologically from those of belladonna-root.

Belladonna Plasters, 1898	No. of Samples
Between 0·5 and 0·4 per cent. of alkaloids	6
„ 0·4 „ 0·3 „ „	4
„ 0·3 „ 0·2 „ „	4
„ 0·2 „ 0·1 „ „	10
„ 0·1 „ traces „	20
Containing no alkaloid	4
	48

Emplastrum Cantharidis.—See under *Cantharis.*

Emplastrum Resinæ.—As regards the three ingredients, resin, lead plaster, and hard soap, GADD reminds us, P.J. LXI, 178, that the direction "melt each ingredient separately" is "impracticable in the case of the soap."

Eucalyptol.—See *Oleum Eucalypti.*

Extracts, Acetous.—See under *Acidum Aceticum.*

Extracts, Green.—See under *Extractum Belladonnæ Viride.*

Extractum Aconiti (Viride).—See under *Extractum Belladonnæ Viride.*

Extractum Aloes Barbadensis.—The C. & D. Diary 1899, has the following sentence on p. 506. "An extract of Barbadoes Aloes is alone official, which, in view of what has been said about Socotrine Aloes, is

strange." Medically there seemed to be no good reason for having two official extracts of Aloes. As to which should be omitted, decision was left to pharmacists and they counselled omission of the *Extractum Aloes Socotrinæ*. Strong support to this decision was afforded by the staff of the *Chemist and Druggist*, as recorded in Vol. XXVIII, p. 352. And the C. & D. LII, 613, gives a curious reason why Socotrine Aloes should be made into extract, namely, that "much of it that comes into the market, while being genuine aloes, is so mixed with extraneous insoluble matter that it is only fit to be made into extract." MOSS, B. & C. D. XXXIII, 519, says that Socotrine Aloes is uncertain as to supply, variable as to quality, and that it is doubtful if any in the London market has a right to the name.

Extractum Anthemidis.—GRIER, B. & C. D. XXXIV, 650, treating of the official mode of preparation, considered that "a much better process would be to exhaust with weak alcohol, and, after recovering alcohol, continue evaporation *in vacuo*," but he gives no experimental data in support of the opinion.

Extractum Belladonnæ Liquidum.—The process of preparation of this alcoholic extract and the method of assay have been subjected to most useful criticism and counter-criticism, but much remains to be done, more especially and if possible in the direction of the determination of active alkaloid or alkaloids instead of total alkaloids. In regard to the latter object practically nothing has been done at present. The following is a list of the papers and comments published during 1898 by the authors mentioned:—P.J. LX, 450, WILSON, who modifies the official assay by evaporating the alcohol after acidification, and by using ether as well as chloroform, as proposed by KELLER, for washing out the alkaloids; P.J. LXI, 163, BIRD, who supports the official process, but admits that the belladonna is not exhausted; P.J. LXI, 178, GADD, who remarks that "the pharmacopœial process, with slight practical modifications, appears to be satisfactory"; P.J. LXI, 234, FARR, who said that non-exhaustion of the root might result in making very small quantities of the extract, but with any reasonable quantity a fair degree of exhaustion was obtained; P.J. LXI, 234, COWLEY, who, working with small quantities and obtaining nearly one and three quarter times the volume of percolate mentioned in the *Pharmacopœia*, found that "even then it required slightly letting down"; P.J. LXI, 232 and 235, J. C. UMNEY, also NAYLOR, who considered the loss of alkaloid due to incomplete exhaustion to be from 15 to 20 per cent.; P.J. LXI, 235, MARTINDALE, who had not experienced any such loss and questioned the advantage of complete exhaustion of this or any other vegetable drug; P.J. LXI, 569, BARCLAY, who found the variation in percentage of alkaloid (officially 0·75) to be, in seven samples from first-class houses, from 0·66 to 0 82, average 0·74; C. & D. LII, 768, BRYANT, who "advocates direct percolation in one percolator with the menstruum to exhaustion, reserving a portion, and evaporating the rest," with the result that though more spirit is used 98·2 per cent. of the available

alkaloid is obtained; C. & D. LIII, 271, 494, 560, CATFORD, who figures an apparatus for the preparation of the extract by "automatic repercolation" and makes some comments, which are replied to by BRYANT, p. 526; C. & D. LIII, 349, MERCK, who finds the process tedious and who warns operators that if the chloroform-extract is overheated loss of alkaloid by decomposition may occur; C. & D. LIII, 975, EBERLIN, who comments on the tediousness of the assay; B. & C. D. XXXIV, 651, HOSEASON, who found the washing of the chloroform solution to be unnecessary, the official and WILSON'S assay to yield similar results, and baryta or lime to be superior to soda for the titration.

Extractum Belladonnæ Viride.—This and other juice-extracts or so-called green extracts originally found a footing in pharmacy for reasons good at the time but since proved to be unsound. The pharmacological or therapeutical value of their chlorophyll—formerly so carefully separated and, when albumen and much moisture had been withdrawn, as carefully replaced—has never been demonstrated. The fact that the removable juice of medicinal green leaves and tops does not fairly represent their medicinal activity has been well established. The medicinal superiority of alcoholic extracts over juice extracts is incontestable. Though favoured by the British for half a century the "green extracts" have not been adopted by other nations. Of the five official in the *British Pharmacopœia* of 1885, three, namely, *E. Aconiti*, *E. Conii*, and *E. Lactucæ*, have been dismissed, and it is not at all improbable that the *E. Belladonnæ Viride* and *E. Hyoscyami V.* of the current volume will not find place in the next *British Pharmacopœia* if the present alcoholic extracts of belladonna can be further improved and if a satisfactory alcoholic extract of hyoscyamus is forthcoming. The possible total displacement, at some future time, of these and other "galenicals" by definite "chemicals" is another story altogether. Such a total displacement, even as regards the galenical preparations of cinchona or of opium, has not yet come to pass.

So long as Extractum Belladonnæ Viride is demanded it may, if desired, be standardised to contain say 1 per cent. of alkaloids separated and weighed. Special difficulties in standardising extracts containing so much inert matter were first surmounted by BARCLAY, P. J. LII, 740. See also processes by FARR and WRIGHT, P.J. LIX, 517, and by NAYLOR and BRYANT, P.J. LXI, 165. The grounds of the pharmaceutical untrustworthiness of juice-extracts was clearly brought out in the discussion on FARR and WRIGHT'S paper, *op. cit.* 530.

Extractum Cascaræ Sagradæ. Extractum Cascaræ Sagradæ Liquidum.—The alterations introduced have resulted in preparations which give general satisfaction to medical practitioners and pharmacists. GADD, P.J. LXI., 179, and MOSS, 346, suggest that the dry extract should be ordered to be powdered. STOEDER, B. & C. D. XXXIV, 517, remarks on the absence of indications of strength of, or tests for, these extracts. Would he please point to, or himself devise, such data? MOSS, B & C.

D. XXXIII, 521, suggests a constant proportion of dissolved solid matter in the liquid extract so far as that can be provided for by evaporating, not to a stated volume, as now, but to a stated specific gravity, then adding the alcohol, and lastly, as at present, enough distilled water to make up the required total volume. In C. & D. LII, 893, MOSS suggests evaporation of the aqueous extract "until, when cold, it has a sp. gr. of 1·155, then add to each 12 fl. ozs. 4 fl. ozs. of 90-per cent. alcohol previously mixed with an equal volume of water." Do different seasons' parcels of "cascara sagrada, in No. 20 powder" differ much in proportion of matter soluble in water? MARTINDALE, P. J. LXI, 235 and 387, bearing in mind that cascara depends for a good deal of its activity on resinous matter, infers that not water as now but alcohol (20 per cent.) should be the solvent employed in preparing the liquid extract; but BIRD, *op. cit.* 240, points out that though the resin is not soluble in water it is soluble in the strong aqueous solution of substances which forms the percolate in the process and that the bark thus exhausted yields nothing appreciable to spirit. MOSS confirms, *op. cit.* 346 and 416, and in C. & D. LII, 893, states that an aqueous extract, such as that which is now official, is not nearly so hygroscopic as a proof-spirit extract. This would seem to be a case in which "it is better to let the well alone," as regards solvent, but to provide for a constant proportion of dissolved matter until a better standard is discovered.

Extractum Cinchonæ Liquidum.—HOSEASON, P.J. LXI, 530, says the assay results of this liquid extract are undoubtedly nearer the truth than were those of the liquid extract of the previous *Pharmacopœia*, but he would add (1) a check by titration, and (2) limits of variation in the proportion of alkaloids.

Extractum Cocæ Liquidum.—The chief bulk of weak percolate for this liquid extract, instead of being evaporated over a water-bath (1885), is to be evaporated at a temperature not exceeding 80° C., in view of the tendency of cocaine to decompose in hot solutions; but GRIER, P.J. LXI, 531, goes beyond this, and recommends cold repercolation as the mode of exhaustion of the coca in order that the tendency mentioned may be still further reduced. Official recognition of a standard of total alkaloids is suggested by J. C. UMNEY, C. & D. LIII, 459, and by HOSEASON, B. & C. D. XXXIV, 651. Still better, aim at a standard of cocaine. Researches are needed in this direction.

Extractum Colchici Aceticum.—The C. & D. LII, 613, prints the following:—"The deletion of ext. colchici acet. is perfectly inexplicable, as it is much more used than the plain extract." "I sell twenty pounds of the acetic extract for one of the simple," said a well-known wholesale druggist at a meeting at which the writer was present. Unquestionably, if popular use and sales had been the sole standards of guidance to physicians in prescribing what medicines were to find place in the *Pharmacopœia*, then the retained *Extractum Colchici* and the dismissed *Extractum Colchici Aceticum* would have changed places. But popularity

is a safe guide only when well founded. Moss, B. & C. D. XXXIII, 519, pointed out that the acetic extract does not keep so well as the non-acetic extract, and that there was little reason for both. COWLEY and CATFORD, P.J. LX, 131, said that the result of their continued work on colchicum corm proved that acetic acid does not possess advantage over weak spirit as a solvent of the alkaloid of the drug, and that owing to the tendency of colchicine to decompose, the simplest method of extracting it is the best one. After describing a tincture and a vinegar from colchicum seeds, the spirituous preparation taking up oil while the dilute acetic acid dissolved out a large proportion of mucilaginous matter, the former of the two authors, who was reading the paper, remarked that why acetic acid was used as a menstruum for colchicum he could not understand, particularly after his experiments. The preparation now official is neither a spirituous nor an acetous extract, the simplest method of extracting the drug has been adopted. The process may still admit of improvement, but at least the deletion of *extractum colchici aceticum* cannot be said to be "perfectly inexplicable"; *q.e.d.*

Extractum Colocynthidis Compositum.—This is to be "a firm extract.' GADD, P.J. LXI, 179, says it "would be better in powder." See also under *Extractum Cascaræ Sagradæ* as to a powdered extract.

Extractum Ergotæ.—BIRD, P.J. LXI, 163, would have preferred the process of repercolation to that of the present method of percolation, but he admits that the new process apparently leaves little to be desired. MARTINDALE, P.J. LXI, 235, regards the process as a very great improvement on that of the previous *Pharmacopœia.* BARCLAY, P.J. LXI, 569, and STOEDER, B. & C. D. XXXIV, 517, seem to have expected an assay process or some indication of potency, but neither of them offers, or even gives a reference to, any published process.

Extractum Ergotæ Liquidum.—The C. & D. Diary 1899, 507, in praising the official extract of ergot, regrets "that an equally rational process is not given for the liquid extract." There should be no difficulty in collecting opinions from obstetricians as to whether or not the liquid extract is as trustworthy as the extract, and, if it is not, in remodelling its process on that of the apparently satisfactory extract. The results of the enquiry and of any necessary experiments would, of course, be published, and could not be otherwise than most useful.

Extractum Euonymi Siccum.—The alterations in the process appear to be generally approved.

Extractum Gentianæ.—See under *Extractum Taraxaci.*

Extractum Glycyrrhizæ.—Moss, B. & C. D. XXXIII, 521, says that this extract, respecting which we are only told officially to "evaporate," is better made *in vacuo.*

Extractum Glycyrrhizæ Liquidum. J. C. UMNEY, C. & D. LIII, 459.

points to the frequency of complaints of the fermentation of the 1885 liquid extract, hence considers the official increase in the proportion of alcohol as a most important change. He considers that the flavour is "infinitely preferable" and the deposit much lessened. BIRD, P.J. LXI, 163, makes similar remarks, and approves of the increased sweetness now obtained. BOA, who reported so usefully on the 1885 details, P.J. LX, 188, might perhaps report on those of 1898.

Extractum Hamamelidis Liquidum.—See *Hamamelis, and its preparations.*

Extractum Hyoscyami Viride.—FARR and WRIGHT'S research, P.J. LIX, 517, and that by NAYLOR and BRYANT, Y.B.P., '98, 359, each including a standardisation process, have already been referred to; indeed nearly all the statements made under *Extractum Belladonnæ Viride* (which see) apply to green extract of henbane.

Extractum Ipecacuanhæ Liquidum.—During the four years prior to the issue of the *British Pharmacopœia* of 1898, several researches of great importance in relation to the chemistry, pharmacy and pharmacology of ipecacuanha were published. The chief of these were by PAUL and COWNLEY. In P.J. LIII, 61, they stated that, endeavouring to assay the drug, they discovered that with the amorphous so-called active principle emetine there were associated other distinctly crystalline alkaloids very different from the separated emetine, and with this knowledge they commenced a new alkaloidal investigation of the various kinds of ipecacuanha. In P.J. LIV, 111, they published a valuable examination of the prior literature relating to the chemistry of ipecacuanha, showed that commercial "emetine" was a mixture of true emetine and cephaëline, and respecting these two alkaloids added considerably to the facts they had previously published, including ultimate analyses. Shortly afterwards, P.J. LIV, 373, they announced results which enabled them to give chemical formulæ for crystalline emetine hydrochloride and crystalline cephaëline hydrochloride, and they traversed the statements published by Kunz-Krause, in the then current number of the *Archiv der Pharmacie.* At page 641 of the same volume they published their discovery of a third alkaloid existing in very small amount in ipecacuanha. At page 690 they published further ultimate analyses, showed that emetine melts at 68° C., while cephaëline melts at 102° C., gave more data respecting the third alkaloid, and further examined and cleared up important points in the earlier literature of ipecacuanha by the light of their discoveries.

From the medicinal importance of ipecacuanha, pharmacological investigation was called forth by these chemical discoveries, and in November, 1895, WILD read a paper before the Manchester Medical Society, which was published in the *Lancet*, 1895, II, 1274, and P.J. LV, 435, condensed as follows by PAUL and COWNLEY in the introduction to their paper on "Brazilian and Columbian Ipecacuanha" in P.J. LVI, 321. "According to Dr. Wild's observations emetine is a good expectorant, but

cephaeline does not appear to be equal to it in this respect, while, on the contrary, cephaeline is undoubtedly superior as an emetic. Having regard, therefore, to the different purposes for which ipecacuanha is used medicinally, it would appear that the two kinds are not equally applicable, and that, in any case, the use of the alkaloids in a separate state may be found desirable. Though at present ipecacuanha is officially defined in the *British Pharmacopœia* [of 1885] as the dried root of *Cephaëlis Ipecacuanha*, and it is at least uncertain whether the Columbian or Carthagena ipecacuanha is derived from that source, there is probably little doubt that both kinds have been used for some time past. Consequently the use of this latter drug for pharmaceutical purposes would require—if admitted—to be recognised on some other basis than that of botanical source." PAUL and COWNLEY thereupon analysed selected samples of the two commercial varieties of ipecacuanha, with the following results :—

	Brazilian		Columbian
	Root	Stem	
Emetine	1·45	1·18	0·89
Cephaëline	0·52	0·59	1 25
Third base	0·04	0·03	0·06
	2·01	1·80	2·20

" These results show that, although the amount of total alkaloid in the two kinds of ipecacuanha does not differ very materially, the relative proportions of emetine and cephaëline are so different that these drugs cannot be regarded as interchangeable indifferently. The difference in this respect is rendered more apparent when the quantities of each of the bases are stated in percentages" :—

	Brazilian		Columbian
	Root	Stem	
Emetine	72·14	65·6	40·5
Cephaëline	25·87	32·8	56·8
Third base	1·99	1·6	2·7
	100·	100·	100·

As regards total alkaloids in mixed ipecacuanha root and stem that proved to be Brazilian, the REPORTER had previously (1893) found, P.J. LIII, 48, an average of, in two determinations, 2·01 per cent. in the root and 1·675 per cent. in the stem. See also his REPORT to the MEDICAL COUNCIL for 1894. His percentage for the root is identical, and the

percentage for the stem practically identical with the foregoing figures for total alkaloids in root and stem, but PAUL and COWNLEY'S quantitative separation of the total alkaloids into three separate bases carries the chemistry of the subject far beyond anything previously attempted. As regards the composition of emetine and cephaëline, PAUL and COWNLEY'S results have been practically corroborated by HESSE, P.J. LXI, 98, but further investigation may be expected.

The relation of ipecacuanha alkaloids to ipecacuanha is now, therefore, almost the relation of cinchona alkaloids to cinchona, or opium alkaloids to opium. But the pharmacology of the third alkaloid must be settled, and the therapeutical positions of true emetine and of cephaëline be confirmed by the clinical observations of medical practitioners, several of whom, it is to be hoped, will publish their results. The two alkaloids and their salts being now articles of commerce, P.J. LIX, 451, will much facilitate such investigations. With fuller knowledge will disappear the present unsatisfactory mode of assaying *extractum ipecacuanhæ liquidum* and, indirectly, *vinum ipecacuanhæ*, by estimating "total alkaloids." The official description does, however, provide for the exclusion of the Columbian or Carthagena (or Cartagena) variety of ipecacuanha, and the inclusion of the Brazilian or "Rio" root only.

As regards the official method of assaying the liquid extract for total alkaloids, it was the best available, though somewhat trying to the patience and skill of an operator. Soon after the publication of the *Pharmacopœia* WILSON published, P.J. LXI, 3, a careful investigation of the process, and suggested a method for which he claimed advantages in the direction of speed and accuracy. Further researches will doubtless follow, and, sooner or later, modes of separately estimating the emetine and cephaëline, to which indeed PAUL and COWNLEY'S papers afford a clue, will be published.

Extractum Jaborandi Liquidum.—All agree that this liquid preparation is an improvement on the solid extract of the previous *Pharmacopœia*; but all regret, rightly, that no standard of potency appears. In our present state of partial knowledge of the active principle or principles of jaborandi no standard is practicable. The estimation of total alkaloid would not only be, as usual, a makeshift, but, in the continued absence of medical researches on the pharmacology and therapeutics of each of the separate alkaloids of jaborandi, pilocarpine, jaborine, pilocarpidine, might even be misleading. Further investigation is required.

Extractum Jalapæ.—HOSEASON, in the three British Journals of Pharmacy of November 18 & 19, 1898, remarked that no definite quantity of resin was officially required to be present in this extract and that an assay process might be added with advantage. The fact that the extract is simply a mixture of jalap resin and a varying amount of inert material is well known to pharmacists and to the majority of medical practitioners.

Extractum Nucis Vomicæ Liquidum.—The standardisation of this extract, in terms of strychnine in place of the previous (1885) makeshift terms

of "total alkaloids," has been approved by all authorities. The fundamental interaction by which separation of strychnine from brucine is officially effected, namely, that between the alkaloid sulphates and potassium ferrocyanide, appears to have been first noticed by BECKURTS, but was only fully worked out and made pharmaceutically available by DUNSTAN and SHORT, Y. B. P., 1883, 472, and P. J. 3, XIV, 291. The strychnine ferrocyanide is stated to be insoluble, the brucine ferrocyanide soluble. The two authors just named say "the precipitate is filtered off, and washed with water acidulated with sulphuric acid (about 0·25 per cent.) until the washings are free from bitterness." And they also remark that "the quantity of sulphuric acid present should never exceed 0·5 per cent. by volume of H_2SO_4, the most favourable proportion is 0·25 per cent. by volume."

Criticism of this quantitative estimation of strychnine as applied, in the *British Pharmacopœia* of 1898, to the standardisation of the official liquid extract of nux vomica, has been started by GADD, Y. B. P. 1898, 449 and 489, as follows:—"No amount of washing appears to free the precipitate *absolutely* from brucine, whilst the bitter taste persists in the filtrate. Prolonged washing, moreover, causes a considerable diminution in weight, with a probable loss of strychnine. Results, therefore, will differ in accordance with each analyst's idea as to the proper quantity of acidulated water to be used for washing the precipitate."

It may be that the presence of some traces of other organic matter, not separated by the purification processes preliminary to the assay, may modify the sharpness of solubility and insolubility of the respective *pure* alkaloid ferrocyanides claimed by DUNSTAN and SHORT. Modifications of the purification processes should reveal whether or not that is the case. Or it may be that the relative solubility and insolubility alluded to is not so sharply defined as at first sight appeared to those authors. In either case, if the employment of a definite quantity of acidulated washing water is a remedy for discrepancies, which apparently are of no great importance, the adoption of that remedy, once settled by the published experiments of competent observers, would be quite in accordance with the spirit of freedom of procedure accorded to workers on pages xiv and xv of the preface to the *Pharmacopœia*.

The official process is in any case somewhat tedious and complicated. Workers who may desire to attempt its simplification, or to displace it by an equally trustworthy, or if possible more trustworthy and simpler process altogether, may usefully refer to a notice of the researches of SCHWEISSINGER, HOLST and BECKURTS, KELLER, SANDER, STOEDER, and others in B. & C. D. XXXIV, 633 and 731.

Extractum Opii Liquidum.—J. C. UMNEY, C. & D. LIII, 459, says: "The reduction in the alkaloidal strength of this preparation to that of the tincture is open to criticism." Possibly, but should not the criticism be medical rather than pharmaceutical? Again, "it is very doubtful whether there is the slightest necessity for the inclusion of two preparations of opium of similar strength." Not doubtful at all, for the similarity in strength was unanimously agreed on by compilers representing

the British practitioners generally, and equally unanimous was the instruction that both liquid extract and tincture should be retained. The one contains two-tenths of its volume of alcohol (90 per cent.), the other five-tenths, an important difference therapeutically, and, moreover, possibly not the only difference.

Extractum Pareiræ Liquidum.—The ED. C. & D., LII, 618, and J. C. UMNEY, C. & D. LIII, 459, appear to have failed in perceiving the principles underlying the official process for the preparation of this extract; hence the former regards the process as "an astonishing procedure . . . the method savours strongly of the armchair and is not clever by any means," while the latter says that why the preparation should be thus made "can only be a matter of conjecture." Surely "it would have been preferable," he adds, "to make 1 of liquid extract from 1 of root." Had either critic referred to the published researches respecting the extract he would have found that at least three good practical pharmacists have experimentally laid down the lines on which the present process is constructed. PROCTOR, more than twenty years ago, P. J. 3, VII, 236, described experiments which led him to give preference to the process providing for the presence of 1 weight of solid extract in 1 similar volume of liquid (the present process) rather than the then official (now J. C. UMNEY'S favoured) method of representing 1 weight of root in 1 similar volume of liquid extract; and PROCTOR was supported by REDWOOD. CONROY, more than thirteen years ago, P. J. 3, XVI, 377, showed that the yield of extract from pareira root varied from 9 to 26 per cent., so that to take the retrograde step which J. C. UMNEY'S suggestion involves might give us a liquid extract three times stronger in extractive at one time than at another. C. UMNEY, P. J. 3, XVI, 408, said, "One can hardly approve of dissolving the solid extract to make the fluid extract, when the liquid extract could have been made so easily in the first instance *of a corresponding strength.*" The italics are the REPORTER'S. If the italicised words are founded on the assumption, since proved to be erroneous, that the root always contains a practically similar proportion of active soluble matter, then *patris est filius.* If they relate to any short way of representing, in the liquid extract, a constant proportion not of root but of the soluble matter of the root, then they forecast the present official process and *patris non est filius.* MOSS also, P. J. 3, XVI, 454, found that pareira root might yield more than double the amount, 9 to 20 per cent., of extractive at one time as it yielded at another, hence that a definite quantity of extract (the present process) rather than root should be represented in a given volume of fluid extract. It may be that other liquid extracts, the active agent of which is not definite, might be prepared on the principle which the REPORTER is now defending. See *Extractum Taraxaci Liquidum.*

Extractum Physostigmatis.—In his Report for 1897 the present REPORTER suggested that this extract should either be standardised, in view of its great variability in proportion of total alkaloid (MACEWAN, C. & D. XXX, 193), or that its use should be discouraged altogether, the

alkaloid physostigmine alone being recognised officially. A middle course has been adopted. Oculists so generally use physostigmine salts that the extract might probably have been omitted so far as they are concerned. But medical practitioners desired the retention of the extract, variation in activity being of little moment in view of the special practice of administration rendered necessary by the exceptionally powerful nature of the drug, namely, to give a small dose at first, and to increase or decrease its amount, or to give the same amount at longer or shorter intervals *according to the symptoms*. This practice while rendering standardisation non-essential need not of itself of course have prevented standardisation, but chemical research while increasing our knowledge of the calabar bean has also revealed the presence of alkaloids other than physostigmine, one chemist asserting that there is present an alkaloid which is pharmacologically antagonistic to physostigmine. It would appear also that important alterations of the active principles may occur, due to solvents, acids, temperature, &c. In these circumstances it was felt that official adoption of standardisation as regards that most unsatisfactory and doubtless inconstant mixture of materials termed "total alkaloids" might create an undue, probably unwarranted, and possibly mischievous sense of security on the part of prescribers. Hence standardisation was negatived, both medically and pharmaceutically, and the middle course of mere recognition of the extract, especially in view of mode of administration, was maintained. The foregoing statement is offered as an answer to the surprise expressed by several critics at the presence of extract of calabar bean in the *Pharmacopœia* and, moreover, of unstandardised extract. Further chemical, pharmacological, and pharmaceutical researches on the active principles of the calabar bean are obviously much needed.

Extractum Strophanthi.—HOSEASON, B. & C. D. XXXIV, 651. alluding to standardised preparations of strophanthus, remarked that "BARCLAY had . . . . suggested a very easy and apparently accurate means of determination. The pharmacopœial authorities, however, seem to have overlooked it." The means of determination alluded to were brought to the notice of, and were considered by, the medical and the pharmaceutical pharmacopœia committees, but in view of the then very partial state of knowledge of the chemistry of strophanthus, and that BARCLAY'S note, P. J. LVII, 463, only related to the tincture, referred to a method which was indirect and founded on an impure product, and that BARCLAY himself stated that "further experiments are being undertaken with the view of, if possible, obtaining the strophanthidin in a still purer condition," it was deemed that the time had not arrived when standardisation of the extract could safely be adopted. Since the *Pharmacopœia* was passed for press, FROMME, *Pharm. Cent.* XXXVIII, 703, and P. J. LX, 504*d*, has published a direct method of assay of the seed—see *Strophanthi Semina*; DOWZARD has published, P. J. LXI, 199, a direct physical method of approximately assaying the tincture and extract; while BARCLAY, P. J. LXI, 655, has elaborated his process and applied it to the extract as follows: "Dissolve 5 grammes of the extract in water, filter, shake the

filtrate with two successive 5 c.c. of chloroform; the chloroformic washings agitated with a little pure water are rejected, and the mixed aqueous washings acidified with 1 c.c. sulphuric acid (50 per cent.), and heated on water bath for one hour. After cooling, the liquid is transferred to a separator and extracted with three washings of chloroform, the chloroform is washed with water (to free from acid), distilled, and the residual strophanthidin dried at 150°F. The amount of strophanthidin yielded, multiplied by 20 and divided by 0·365, gives the proportion of strophanthin present in 100 grammes of the extract. With regard to the strength to be chosen for the standard, 4 per cent. was suggested as a reasonable figure."

The REPORTER suggests a pharmaceutical research having for its objects the application of FROMME'S method to the assay of the extract and a comparison of that method with BARCLAY'S and with DOWZARD'S, and publication of the results with any improvements that may have presented themselves. Recent chemical researches on strophanthus, by THOMS, KOHN, and KULISH, and FEIST, would of course be consulted—see *Strophanthi Semina*.

Extractum Taraxaci.—MOSS, B. & C. D. XXXIII, 522, remarks that "taraxacum, like gentian, rapidly changes at 160° to 180° F. if not constantly stirred towards the end." Presumably all infusions, decoctions, tinctures, or other solutions that are in process of being converted by evaporation into extracts are frequently stirred, and even constantly stirred towards the end. Is any special addition to the official directions necessary in the case of taraxacum or of gentian? What are the indications of "rapid change," and to what is it evidently or apparently due?

Extractum Taraxaci Liquidum.—J. C. UMNEY, C. & D. LIII, 460, suggests that the generally approved mode of dealing with sarsaparilla for liquid extract, namely, repercolation, be applied to taraxacum; the menstruum being like that for senega, a mixture of 2 parts of 20-per-cent. alcohol with 1 part of 45-per-cent. alcohol. The product, he says, is "much more pleasant and keeps much better." MOSS, B. & C. D. XXXIII, 522, also regards the present process as tedious and wasteful, and recommends the repercolation method as adopted for liquid extract of sarsaparilla.

In seven commercial samples A. J. DEY, P.J. LX, 179, found more or less copper, but none in a specimen made by himself in strict conformity with the pharmacopœial directions. The specific gravity of his own specimen was 1·064, of the seven samples from 0·992 up to 1·088; alcohol per cent. by volume in his own sample 27·95, in the others from 19·37 to 40·84; grains weight of residue from 1 fluid ounce, in his own 91, in the others 25·0 to 121·8. These are great variations. The date of publication of the paper was February 19, 1898, before the present *Pharmacopœia* was published. It is to be hoped that a similar set of examinations now would afford more concordant results. Probably the root varies in proportion of soluble matter according to climate. Is this a case in which

strength should be determined by proportion of extractive as shown either by specific gravity or by gravimetric estimation, after the plan officially adopted for *Extractum Pareiræ Liquidum* (which see)?

Fellows' Syrup.—See *Aitken's and Easton's Syrup.*

Ferri Arsenas.—HOSEASON, P.J. LXI, 530; C. & D. LIII, 832; B. & C. D. XXXIV, 651, remarks that iron arsenate is "therapeutically of most value for its arsenic content, yet the ferrous iron is estimated while the arsenic is not." The ferrous iron is estimated as a means of determining the condition of the salt. If no ferrous salt other than arsenate were present the official volumetric test would indirectly show the proportion of arsenium. Conversion of the ferrous arsenate into magnesium pyro-arsenate, weighing the latter, would show whether or not this is the case, and thus either confirm the trustworthiness of the official procedure, as regards arsenium as well as iron—that is, ferrous arsenate, as officially contemplated—or displace a process of inferior by one of superior usefulness.

Ferri Phosphas.—The official chemical formula for the ferrous arsenate is $Fe_3(AsO_4)_2,6H_2O$, while that for the phosphate is $Fe_3(PO_4)_2 8H_2O$. DOBBIN, P.J. LXI, 666, prefers the presence rather than the absence of the central comma. So does the REPORTER.

Ferri Sulphas Exsiccatus.—BARCLAY, B. & C. D. XXXIV, 656, has "never experienced any *considerable* [italics REPORTER] difficulty in obtaining a salt up to the old [1885] standard [97½ per cent. of $FeSO_4$, H_2O] if good sulphate were used for drying." LUNAN, in 1888, P.J. 3, XIX, 226, found an average of praetically 89 per cent. in eighteen collected samples. But twelve of the eighteen were above that average. In 1895, P.J. LIV, 768, he remarks that perhaps 90 per cent. would be obtainable. In 1897 the EDITOR found that specimens containing 92½ per cent. were easily obtainable. Eight of LUNAN'S eighteen samples of 1888 contained over 92½ per cent. The REPORTER'S present conclusion is that the official requirement of 92½ per cent. is neither too high nor too low. But, exchanging rôle, perhaps BARCLAY will assay some commercial samples, and LUNAN test two or three home-made specimens, or a fresh investigator altogether fulfil both functions and publish his results. The *Pharmacopœia* will in any case benefit.

Ferrum Redactum.—"Not the universally used *reductum*," says STOEDER, B. & C. D. XXXIV, 517. Will classical scholars please advise as to the participle? The critic also remarks that "only 75 per cent. of Fe is demanded as against 86 per cent. in our [Dutch] pharmacopœia." BARCLAY also, *op. cit.* 517, says the percentage, 75, "might with advantage have been even higher, that of the U.S.P. being 80." It should be noted that the *British Pharmacopœia* does not limit the percentage to 75, the words being "at least 75 per cent." The previous *British Pharmacopœia* having fixed the minimum at 50 per cent., it was thought that, at present, a higher minimum than 75 per cent. would, perhaps, scarcely be in accordance with the wishes of medical practitioners.

In the assay process, MERCK, C. & D. LIII, 348, makes the useful suggestion that the words "the whole be shaken occasionally during ten minutes" be amplified to "the whole be shaken frequently and kept hot during ten minutes." Pharmacists are credited, on p. xiv of the preface to the *Pharmacopœia*, with full knowledge on such points, but it is better, obviously, to err on the side of precision of statement than of laxity. Still, no analyst should need to be told, Y.B.P. 1898, 407, to wash the precipitated copper.

PECK, in an unfinished research having for its aim the supply of purer reduced iron by manufacturers, P.J. LXI, 159, shows already how the *Pharmacopœia* can in four ways aid in this most desirable object. Thus: "(*a*) The ferric hydroxide should be ordered to be thoroughly washed and the hydrogen carefully purified." The *Pharmacopœia* no longer gives detailed "modes of preparation of official chemical substances" (preface, p. xiii) but in the preliminary general description of the source of reduced iron it can allude to *pure* ferric hydroxide and *pure* dry hydrogen. "(*b*) That more stringent tests be added to ensure the absence of sulphides." When once it can be shown that reduced iron can be so prepared as not to contain any trace of sulphur, it will be easy to increase the severity of the following official requirement, "it dissolves in hydrochloric acid with the evolution of hydrogen, and without any smell of hydrogen sulphide," but the employment of *pure* ferric hydroxide and *pure* hydrogen by manufacturers will tend to reduce the already minute amount of this extremely undesirable impurity. "(*c*) There should be a limit to the amount of arsenic present." Offhand one would say there should be *no* arsenium present, but considering the great delicacy of some of the tests for that element, and that a certain minute amount—though, so far as any effects on the health of patients taking reduced iron is concerned, an utterly insignificant amount—may gain access from the iron, the zinc, or the sulphuric acid employed at one or other stage of the operations of converting iron ore into *ferrum redactum*, it may be desirable, as PECK advises, to state a limit. To this end more experiments are needed. The REPORTER suggests that PECK should adopt, tentatively, the official arsenium limit laid down under *glycerinum*, advising as to the amount of reduced iron to be subjected to the test and as to the time-limit up to which a yellow stain ($AsHHg_2Cl_2$) should not appear and *a fortiori* not the brown stain ($AsHg_3Cl_3$) or the black (As_2Hg_3). "(*d*) Various modifications should be made in the method for estimation." When PECK has completed his research, the discrepancies he has met with between the results of the copper method (by FUGE, P.J. 3, XX, 1053) and the mercuric chloride method will have been resolved and he will be in a position to advise.

The *British Pharmacopœia* requires reduced iron to contain, as already stated, 75 per cent. of metallic iron; PECK, *op. cit.*, found an average of 70·25 per cent. in twelve commercial samples. The *United States Pharmacopœia* requires not less than 80 per cent. STEVENTON, Proc. Amer. Phar. Assoc. XLII, 172, found an average of 59·10 per cent. in ten U.S.A. samples; PATCH, *op. cit.* 205, an average of 51·21 in ten samples; DOHME, *op.cit.* 294.

an average of 65·0 in five samples. Average of the twenty-five United States samples, 57·10. So far as these few experiments go, the British demand being at least 75 per cent., the supply is 70¼ per cent.; the United States demand being at least 80 per cent., the supply is only 57 per cent. STOEDER gives us the Dutch demand, 86 per cent.; he says nothing about the Dutch supply.

Surely it would be worth the while, directly or indirectly, of one or more manufacturers in leading countries to so select the materials, and so carry on the processes for the production of *ferrum redactum* that neither hydrogen sulphide, arsenide, or carbide should be producible from the remedy, either in the alimentary canal of a patient or the test-tube of a chemist. Such commercial enterprise would sooner or later be supported by the test-paragraphs of every national pharmacopœia.

Filix Mas.—DRUCE, P. J. LXI, 202, writes as follows:—"The name of the male fern is given as *Aspidium Filix-mas*. In most works on English botany *Lastrea* is the name used for the genus, and this was established by Presl in 1836 as distinct from *Aspidium*. The oldest name for the genus appears to be *Dryopteris*, which was used by Adanson in vol. ii., p. 20, of his 'Famille des Plantes' of 1763, and where he diagnoses the genus. Our plant is *Dryopteris Filix-mas*, Schott, 'Gen. Fil.,' sub. t. 9 (1836)." HOLMES replies (through the REPORTER) thus:—"Whether the genus *Aspidium* or *Lastræa* should be adopted as the generic name for this plant depends on the views held of the limits of the genus *Aspidium*. Adanson's 'diagnosis' of the genus *Dryopteris* can hardly be called a diagnosis. In the tabular arrangement he gave under *Dryopteris*, it is stated that the sori are rounded, in two ranks under eaeh division of the leaves, and that the indusium has 1 valve 'en auvent, en parasol,' which can hardly be translated as reniform. And under *Filix-mas* he says 'Le Palma Félix dont les cloux ou enveloppes *en forme de parasol* que portent les étamines et les grains ont un certain rapport avec les enveloppes de la Fougère mâle appelé *Dryopteris*.' Schott (1836) in the work quoted by DRUCE does not give any illustration of the genus *Dryopteris*, but in a note under tab. 9 says 'Polystieha Rothiana nonnulla quibus venulæ bifurcæ, indusia dimidiate peltata reniforme excisæ, receptaculo excentrico l. informe affixa et vasorum fascieuli in stipitæ 5 l. plura genus distinctæ Dryopteris Adansonii constituunt. Exempla D. Filix mas et fragrans.' But Swartz in 1806 had given good descriptions of speeies under *Aspidium*, placing A. Filix mas in a section with reniform indusia, and unless *Lastræa* be held as a genus instead of a section of *Aspidium*, Swartz has precedence. As *Aspidium Filix-mas*, Swartz, is adopted in the Pharmacopœias of Germany and Switzerland, in Pharmacographia, Bentley and Trimen's Medicinal Plants, Stille and Maisch's National Dispensatory, and in Koehler's Medicinal Pflanzen, it is evidently generally accepted by botanical and pharmaceutical authorities that *Lastræa* should only be regarded as a section of *Aspidium*, not as a separate genus."

The ash of male fern. varies, according to HOCKAUF, B. & C. D.

XXXIII, 597, from 1·4 to 3·0 per cent., the insoluble portion of the ash from 0·1 to 0·5 per cent.

Fluid Acetracts.—See under *Acidum Aceticum.*

Fluid Extracts.—See the respective Liquid Extracts (*Extractum . . . Liquidum*).

Fœniculi Fructus.—DRUCE, P. J. LXI, 202, remarks that "the name *Fœniculum capillaceum*, Gilibert, 'Flora Lituan.' Vol. ii (1782), p. 40, is retained, but the oldest name is *F. vulgare*, Miller, 'Gardener's Dictionary,' ed. 8 (1768)." HOLMES thus replies (through the *Reporter*), "*Fœniculum vulgare* is the name given by MILLER to the wild fennel, and *Fœniculum dulce* to the long-fruited or sweet fennel. The *Pharmacopœia* gives a description of the fruit which indicates that both the Saxon and French cultivated forms are intended, and if either of MILLER'S names were used it would be *F. dulce*. GILIBERT'S description does not specify any particular variety, and is therefore more applicable to the plants yielding the commercial varieties of the fruit intended by the *Pharmacopœia* description. *F. capillaceum*, Gilibert, is the name adopted by recent *Pharmacopœias*, and recent works on Medicinal plants."

The ash of fennel was found by HOCKAUF, C. & D. Diary 1899, 266, to be in the whole fruit 8·94 per cent., with 0·24 per cent., insoluble in hydrochloric acid, and in the powder 8·8 to 15·6 per cent., with 0·8 to 6·35 per cent. insoluble in the acid.

Formulæ, Constitutional.—See under *Acidum Tartaricum.*

Galbanum.—DIETERICH, C. & D. LIII, 131, suggests the same limits for ash and alcohol-insoluble matter as he has already suggested for *Ammoniacum* (which see). He adds, "What I have remarked regarding ammoniacum is equally applicable to galbanum. The gum-resin in lump or mass is to be preferred to that which comes into the market in tears." These comments, also, will doubtless receive the attention of British pharmacists.

Galenical and Chemical Pharmacy.—See under *Standardisation.*

Gelatinum.—A firm of gelatin merchants in this country, agents for foreign manufacturers, wrote to the REPORTER to say that no gelatin that they knew of fulfilled the official requirements. He referred them to qualities which did comply with the official standards, but pointed them to page viii of the preface of the *British Pharmacopœia*, to show them that those high standards of quality only applied to gelatin "to be used in medicine." They replied that some of their Pharmaceutical customers considered that any gelatin other than that of B. P. quality if purchased of a chemist and druggist would not pass the scrutiny of officials under the Sale of Food and Drugs Acts, however good it might

be for manufacturing purposes, or even for dietetic purposes, and that consequently as vendors of such gelatin they would run the risk of conviction by magistrates who regard the *British Pharmacopœia* as the standard. It needs only a reference to the prefatory page named to show that if the purchaser's request indicated gelatin of the official quality, such an article could alone be supplied without risk. But the *Pharmacopœia*, however useful as affording contributory evidence respecting the quality of gelatin sold for purposes other than medicinal, was never intended to afford, and obviously does not legally afford, a standard of quality for gelatin which, though not good enough for medicinal use, perfectly satisfies the household requirements of consumers generally; *a fortiori* it is not a standard of quality for gelatin scarcely good enough for household employment, but of excellent quality for manufacturing purposes. That gelatin freely and legitimately sold by traders generally should not similarly be sold by pharmacists, would amount to officialism reduced to an absurdity. *Acaciæ Gummi*, *Benzoin*, *Myrrha*, and many other official substances (see *Sale of Food and Drugs Acts*) are in similar case. To set up broadly the official medicinal standards as commercial standards would be absurd, while to bring down the medicinal standards to commercial standards would be prejudicial to the important interests of the sick and the suffering. The Sale of Food and Drugs Acts cannot escape the defects of their virtues. There must be more than one standard for such official articles as *benzoin*, *gelatin* and *gum*; and purchasers must ask, or learn to ask, for what they require. The purchaser as well as the vendor must accept responsibility. *Cavcat venditor sed caveat emptor.*

Gentianæ Radix.—The official description is "dried rhizome and roots." DRUCE, B. & C. D. XXXIII, 707, would prefer "dried rootstock and roots." HOLMES (through the REPORTER) agrees that the word rootstock is preferable and conveys a distinct meaning, being applied only to the part of the upright stem crowning the true root.

Glycerinum.—The official description includes the words "Glycerin or glycerol." The B. & C. D. XXXIII, 517, remarks as follows, verbatim et literatim. "The chemical method of spelling glycerine is adopted, but a further step might as well have been taken whilst about it, and recognise only the purely chemical word 'glycerol.'"

Glycerinum Acidi Borici, Glycerin of Boric Acid.—A few critics allude to other names. Thus, C. & D. LII, 613, "*boroglyceride* . . . gets a show"; also *op. cit.* 614, "*glycerole borate* or *solution of glycerol borate* would probably be a more correct description of it." COULL, B. & C. D. XXXIV, 787, says "not really glycerine of boric acid but *glyceryl borate*." The answer to all this is that the nine official *glycerins* have pharmaceutical rather than strictly chemical names, names moreover which are therefore less likely to change—a very important matter from the medical point of view. MASON, P. J. LX, 448, would like to have seen a *glycerinum belladonnæ*.

Green Extracts.—See under *Extractum Belladonnæ Viride.*

Guaiaci Lignum.—DRUCE, B. & C. D. XXXIII, 707, noticing the alterations in the official descriptions, says "the chips and shavings being no longer mentioned." The omission is intentional. See under *Hæmatoxyli Lignum, Pterocarpi Lignum, Quassiæ Lignum,* and *Sassafras Radix.*

Guaiaci Resina.—DIETERICH, C. & D. LIII, 130, to distinguish the commercial varieties, and to detect adulteration by colophony, suggests the insertion of the following acid-numbers in the *Pharmacopœia*: for the crude lump 90 to 95, for the alcohol-purified 90 to 100, and for the natural tears 70 to 75; he would add that guaicum resin is almost free from ash. What is the opinion of practical pharmacists on these recommendations? The experiments of DIETERICH should be repeated, the percentage of ash in typical samples should be ascertained, and the results should be published.

Gum.—See *Acaciæ Gummi.*

Hæmatoxyli Lignum.—In the first, second, and third *British Pharmacopœias* the *sliced* heart-wood was recognised. The result was the very general employment in pharmacy of the commercial dark-coloured and fermented chips specially prepared for the dyer and exactly what he requires, but apparently—for pharmacology does not say certainly—useless in pharmacy. *Vide* SIEBOLD, Y.B.P. 1887, 548. In the fourth *British Pharmacopœia* (1898) the reference to slices or chips, in the leading definition, was, therefore, withdrawn. But for the official decoction, and indeed for other preparations, the logs must be reduced to slices, chips, or other comminutions. Hence, to guard against the employment of the dyer's article, under the "Characters" of *Hæmatoxyli Lignum*, the chips or the coarse powder must be "unfermented," and have "a sweetish astringent taste"; DRUCE, B. & C. D. XXXIII, 707, adds, "it would have been well to describe the colour so as to have ensured this." On the contrary it was not only unnecessary but undesirable to describe the colour *of the chips.* Unnecessary, because in an immediately previous line the wood is stated to be "internally reddish-brown." Undesirable, because that would have been going too near to an official recognition of the chips as a commercial article, which is what the compilers desired to avoid. The *Pharmacopœia* at present defines woods, barks, roots &c., but not their slices, chips, shavings, raspings, or powder. If the pharmacist chooses to purchase, instead of to prepare, those comminutions, he loses the guarantees of genuineness and quality afforded by the appearance of the whole drugs, and he takes such a course on his own responsibility. To include amongst "Characters" such a reference to chips and powder, in the particular case of logwood, as will prevent certain spoilt chips or powder being employed is necessary; to recognise officially the chips and powder, even of the proper article, is another matter altogether. By the way, the *British Pharmacopœia*, the United States Pharmacopœia, and other standard authorities, have always recognised the reddish-brown sweet-

tasting logwood, never the deep red chips or powder which have lost sweetness, and the hæmatoxylin of which has become oxidised to hæmatein. The reputation of logwood, as a drug, has been founded on the natural, not on the fermented article. See also *Guaiaci Lignum*, *Pterocarpi Lignum*, *Quassiæ Lignum* and *Sassafras Radix*.

Hamamelidis Folia.—The official description is "The leaves, fresh and dried, of Hamamelis virginiana, *Linn.*" DRUCE, B. & C.D. XXXIII, 707, says, "A reference might have been given to the plate 198 in vol. 5 of Sargent's Silva." HOLMES replies (through the REPORTER): "A reference is given under *Hamamelidis Cortex* to a good figure of the plant, and in a work more easily referred to than Sargent's Silva. There is therefore no necessity for a second reference."

Hamamelis, and its Preparations.—The relation to medicine of hamamelis—root, bark, shoots and twigs, fresh leaves, dried leaves—is admittedly obscure. G. B. WOOD and BACHE, "United States Dispensatory" (17th edit. H. C. Wood, Remington, Sadtler, p. 677), allude to its use by the North American Indians, and to its being strongly recommended by FOUNTAIN and DAVIS, N.Y. *Journ. Med.* X, 208, and *Trans. Amer. Med. Assoc.* I, 350, and by MUSSER, *Phila. Med. Times*, XIII, but they add as follows: "Of late years professional attention has been very strongly directed to the remedy on account of the enormous sale of a much-vaunted proprietary remedy, said to be made by distilling the bark with very dilute alcohol (6 per cent.), and used externally for sprains and bruises, and internally for most of the diseases to which flesh is heir. The pecuniary success of this remedy probably has depended, in very small part, upon the virtues of the witch hazel, which seems to possess no active physiological properties. At least, we have injected a very concentrated distillate, in large quantities, into frogs and into mammals without perceiving any more effects than would be produced by the injection of similar quantities of distilled water, and Dr. Guy, in Paris, has reached similar conclusions. . . . It has been used by some practitioners with good results in cases of hemorrhoids, but has failed to yield in other hands corresponding advantage. (See *Boston Med. & Surg. Jour.*, April 16, May, 1885; also *Bull. Gén. de Thérap.* vol. cvi.)" A certain slight odour of the distilled liquid led to a widespread idea that it contained formaldehyde, but FEIL, *Amer. Drug & Pharm. Rec.* Sep. 10, 1897, p. 139, not only showed that this was not so, but that the green colour yielded by ferric chloride, as well as yellowish-green with caustic potash, suggested the presence of protocatechuic acid. WYATT, P.J. LXI, 654, and, previously, GUNN, C. & D. XLIX, 796, throw doubts on the presence of formaldehyde. It will be remembered that methyl-protocatechuic aldehyde (vanillin) is the body to which is due the odour and flavour of vanilla; it would not therefore be surprising if to some such volatile body, perhaps not always present, the slightly astringent activity of hamamelis preparations, when they are active, may be due.

The foregoing criticisms and notices showing that the pharmacology

and chemistry of hamamelis is somewhat obscure, no one will be astonished that pharmaceutical criticisms on the hamamelis preparations of the fourth *British Pharmacopœia* are not very helpful towards its improved pharmacy in the fifth. The *liquid extract* (of the dried leaves), *tincture* (of the bark), and *ointment* (of the liquid extract), are of minor importance. The *liquor* (of the fresh leaves) has been criticised in respect of name, process and whole description. BOARDMAN, B. & C. D. XXXIII, 665, thinks *liquor* is an unusual term for a distillate; ROUSE "Synonyms," p. 108, remarks that "it is difficult to see how a more inappropriate name could have been chosen," and even J. C. UMNEY, C. & D. LIII, 25, says "a more unsuitable name could scarcely have been selected. Why not 'distilled spirit of hamamelis'?" The last-named critic suggests this alternative name. But not one of the eighteen "spirits" of the *Pharmacopœia* is termed a *distilled* spirit. *Cela va sans dire*, either as regards an official spirit, or the constituents of an official spirit. Moreover, it is not essentially or necessarily a spirit at all, or, at all events, more of a spirit than would be many official liquid extracts or many official concentrated solutions, for it is often made by distilling hamamelis with water only, and *afterwards* adding 10 or 15 per cent. of strong alcohol. So that neither of the two words "distilled spirit" is appropriate. HŒFFKEN, *Bulletin of Pharmacy*, September, 1895, found the percentage of alcohol by volume to vary in different samples from 8 to 12·8 per cent. In the United States the preparation has been termed *hamamelis water*, *witchhazel water*, *witchhazel extract* (see REMINGTON'S "Practice of Pharmacy," 2nd edit. p. 1225). Yet it is something more than a water or an extract. The official name *liquor hamamelidis* or *solution of hamamelis* does not satisfy the REPORTER, but he has not yet heard of one better, or so good, in his opinion.

As to process and description, the C. & D. Diary 1899, p. 512, would displace that which is official by the following: "A solution prepared in New England by macerating the fresh leaves and twigs of *Hamamelis virginica* in water, distilling the macerate, and adding 12 to 15 per cent. of alcohol to the distillate." In the present state of our knowledge, or want of knowledge, of the chemistry of hamamelis this suggestion can scarcely be said to be satisfactory. Besides, the liquid is not always thus prepared. GADD (P.J. LXI, 179) says, "Liquor hamamelidis not being able to be made on this side of the Atlantic, it would have been better if characters and tests had been given instead of a process of manufacture." J. C. UMNEY, C. & D. LIII, 25, makes similar remarks. The present state of knowledge is insufficient for giving trustworthy "characters." He also is "doubtful whether it should have been made official without more definite information as to the volatile constituents upon which its medicinal properties are based." MOSS, B. & C. D. XXXIII, 593, is disposed to regard the official process as an improvement—over the U. S. P. process (leaves and twigs).

The researches suggested by the British Pharmaceutical Conference in its printed "blue list" include the following:—"*Solution of Hamamelis.*—In view of the inclusion of this in the *Pharmacopœia*, the separation and

examination of the volatile principle is desirable." It is submitted by the REPORTER that a conjoined pharmacological, therapeutical, chemical and pharmaceutical investigation is necessary for the removal of the obscurities surrounding hamamelis and its preparations. That done, satisfactory descriptions can easily be prepared. Thus, the solution may be treated, like Rose Water, as an article "of commerce" if it cannot be prepared on this side of the Atlantic.

Hydrargyri Oleas.—Many authorities recommended that the interaction of mercuric oxide and oleic acid, B.P. 1885, 281, should be superseded by that of mercuric chloride and some form of sodium oleate. Thus CRIPPS, P. J. 3, XVI, 620; BERINGER, P. J. 3, XX, 676; and the Queensland Board of Pharmacy, by direct Report. The recommendation was adopted with fairly satisfactory experimental results. But some pharmacists find difficulty in producing a good preparation. MANN, P. J. LX, 494, obtained a fatty mass which darkened on the least attempt to heat it, while COX, 495, said the separation of water from the washed mercuric oleate was not easy, and the whole of the operations were troublesome. The B. & C. D. XXXIII, 522, remarked that the process had frequently been described as "messy." The *Pharmacopœia* itself states that this unctuous substance is liable to darken. Clearly further pharmaceutical research is needed.

Hydrargyrum cum Creta.—"Dose 1 to 5 grains." MACMILLAN has reported, C. & D. LIII, 1003, that in Glasgow prescriptions more commonly showed the adult dose to be 6 to 10 grains.

Hyoscinæ Hydrobromidum.—The *British Pharmacopœia* states that "it is soluble in 1 part of cold water"; the United States Pharmacopœia of 1890, "1·9 parts"; the Swiss Pharmacopœia of 1893, "easily soluble in 1 part." The last-named was the accepted figure for some years. JOWETT, Y.B.P. 1898, 431, draws attention to Hesse's more recent figures, 1 in 4, as "more correct," but does not give his own, presumably correct, determination. Again, the official statement of the action of heat is "when heated to 212° F. (100° C.) it loses rather more than 12 per cent. of its weight, and fuses to a viscid mass which becomes liquid at a temperature of 379·4° to 381·2° F. (193° to 194° C.)." JOWETT, *op. cit.*, would vary this statement as follows: "The hydrated salt when heated (in a capillary tube) to 100° C. forms a clear liquid, and no alteration can be observed on further heating to 181° C. (the melting point of the dehydrated salt)." According to SCHMIDT the commercial salt is a mixture of a lævo salt melting at 193° C., and an inactive modification melting at 180° C., the mixture melting at 181° C. Once more, as regards the composition of the precipitate formed with auric chloride. The official words are, "it forms, with auric chloride, a crystalline salt having a melting point of 388·4° F. (198° C.)." JOWETT has himself discovered that this precipitate is a new additive gold salt, $C_{17}H_{21}NO_4HBr,AuCl_3$, melting at 215° C., and not the aurichloride as prepared in the usual manner, which does melt at 198° C. JOWETT'S valuable discoveries and excellent comments are somewhat

marred by the apparent assumption that the official paragraphs on the mydriatic alkaloids atropine, hyoscyamine, and hyoscine were for the most part belated when they were passed for press, hence were "incorreet." The worker would be bold who could assert that absolute correctness respecting either of these powerful principles has yet been reached. Fortunately, the pharmacological action of SCHMIDT'S lævo salt and its stereo-isomer would seem to be identical, but medical practitioners would nevertheless prefer to be supplied with a single substance of constant properties rather than with a mixture, especially when the salts have sueh great potency that their dose is $\frac{1}{200}$ to $\frac{1}{100}$ grain.

Hyoscyaminæ Sulphas.—When the official paragraphs were passed for press hyoscyamine was cautiously described as being "contained in hyoscyamus leaves, and possibly other solanaceous plants." "Possibly" might have been "probably," while later each word might have been omitted. JOWETT, Y.B.P., 1898, 430, says "the melting point of the sulphate as it occurs in commerce is about 200° C., whilst I have found the pure salt to melt at 204° C, and not, as stated in the B.P., at 206° C. I would suggest a melting point of *not lower* than 200° C." We shall see. The commercial salt may possibly improve in quality before the next *Pharmacopœia* is published.

Infusum Aurantii Compositum.—See *Infusum Gentianæ Compositum.*

Infusum Gentianæ Compositum.—The official formula includes dried bitter orange peel and fresh lemon peel. The B. & C. D. XXXIII, 517, remarks "Now that fresh orange peel is ordered for the tincture of orange, it would have been better to have used it in this infusion, and especially to have made the concentrated preparation official. A much more aromatic preparation would have resulted." MACMILLAN, B. & C. D. XXXIV, 785, is thus reported: "A good deal had been said about using fresh lemon peel in the various preparations into which it entered, but he would like the Pharmaceutical Committee to say how fresh infusion of gentian and fresh compound infusion of orange were to be prepared in midsummer when lemons could not be obtained." The question of fresh or dried orange peel in future official formulæ is for pharmacists to settle. Lemons can be obtained practically all the year round. It should not be very difficult to make and store tincture of orange when fresh bitter oranges are easily obtainable. The infusion and compound infusion containing dried bitter-orange peel can be prepared at any time.

Ipecacuanhæ Radix.—P.J. LX, 415, states as follows: "It is remarkable that the word radix has been added here, while cortex has been removed from cascarilla." As regards the latter point see *Cascarilla.* The apparent consisteney favoured by the criticism is impracticable. As in so many other cases, consistency in a single direction involves inconsistencies in other directions.

The official description of ipecacuanha root provides for the exclusion of the Cartagena variety and the inclusion of the Brazilian. But P.J.

LX, 415, remarks that "it might have been supposed that Cartagena ipecacuanha, which contains more of the actively emetic principle cephaëline, would have been selected as the official kind. It yields preparations much more active as emetics than the Brazilian variety." That may be, but the Brazilian contains more of the expectorant principle, emetine; and ipecacuanha is far more frequently needed as an expectorant than as an emetic. In truth the pharmacy of ipecacuanha is now, and will be for a few years, in a state of transition. The discovery of cephaëline and emetine as distinct alkaloids, and the determination of their distinct pharmacology and therapeutics, is slowly creating a medical demand for the respective alkaloids, while arrangements for the supply of these are in process of development. This subject is further treated under *Extractum Ipecacuanhæ Liquidum.*

In B. & C. D. XXXIV, 656, and P.J. LXI, 568, BARCLAY says, "It seems a pity that no standard for alkaloid in the root itself has been fixed, for the powdered drug is, and will no doubt continue to be, largely used." Standardisation in the case of ipecacuanha was, clearly, tentative, and was applied to the extract because the application was easier than to the powder; while its extension or abandonment will depend on the developments of research. From what has been stated in the foregoing paragraphs and in those of the article on *Extractum Ipecacuanhæ Liquidum*, it would appear that, so far, any such standard is unscientific and even liable to be misleading. The same remarks apply to a similar criticism by STOEDER, B. & C. D. XXXIV, 516, especially applicable being the remarks on the transitional state of the pharmacy of ipecacuanha. HOCKAUF, B. & C. D. XXX, 597, finds the percentage of ash yielded by ipecacuanha to be from 2·0 to 5·3.

Jaborandi Folia.—The official "dried leaflets of *Pilocarpus Jaborandi*" are said to contain something like 1 part of pilocarpine in 200. But, according to P.J. LX, 415, they "are at times not procurable in the market, and a double quantity of the leaves of *P. selloanus* would have been about equal in strength to the genuine leaves," hence that species or *P. microphyllus* might, the critic says, have been made official. See also *Extractum Jaborandi Liquidum.*

Jalapæ Resina.—See under *Extractum Jalapæ.*

Kino.—BOSISTO, P.J. LIX, 193, showed that kinos and catechus are exuded from many myrtaceous trees, chiefly from Eucalypti. Most of these hardened juices appear, he remarks, on the outer bark, and, under the bright sunlight and warmth, soon degenerate into a degraded bassorin which is insoluble. But the juice of the *Eucalyptus rostrata*, not being able to force its way through the very hard bark of that tree, collects in treacly form beneath; and he had known one or two bucketfuls of the liquid to be obtained on boring a small hole in a swollen part. This, evaporated, yielded a ruby-red kino entirely soluble in water and spirit. He said: "The supply from Australia would be very great if only a remunerative market opened." This would seem to be an ideal "kino." It is, in

fact, the typical Eucalypti Gummi "or so-called red gum" of the *British Pharmacopœia.*

The official kino, says the C. & D. Diary 1899, 511, "is obtained chiefly in the Government forests in Wynaad, North Malabar. . . . Kino is sent by the native manufacturers to Aleppy, Calicut, Cochin, and occasionally to Mangalore, on the Malabar coast, where it is bought up by a few exporters at a few pence per pound. They export a little of it and destroy the rest, so that the price may be maintained. During recent years the price in Mincing Lane has fluctuated between 10*s.* and 20*s.* per lb., although the cost in India cannot have been more than 3*d.* to 6*d.*" If this description of an apparently disgraceful state of things be true, one of two courses should be adopted: (*a*) dismiss *Kino* from the next *British Pharmacopœia*, and retain only *Eucalypti Gummi*; or better (*b*), so describe *Kino* as to include not only the *Malabar* (East Indian or Madras) *Kino* now official, but the *Botany Bay Kino* now official under the name *Eucalypti Gummi*, and perhaps *Bengal Kino*, already nominated for official recognition in the Indian section of the Indian and Colonial *Addendum*, under the name *Buteæ Gummi*, Butea Gum. Already there are no very great differences in the official "Characters and Tests" of *Kino* and *Eucalypti Gummi.*

An interesting description of the varying conditions under which *Malabar Kino* is collected and dried will be found in C. & D. LII, 355. Analyses of six samples illustrating this description, by WILL and BRANCH, are given in C. & D. LIII, 57. The ash of the samples varied from 0·7 to 1·3 per cent.

A comprehensive research or series of researches on the pharmacology, pharmacy, and official position, of the various kinos and catechus and their constituents is much needed. Their chemistry is in advance of their other relationships. Some simple test of the degree of tenacity with which their respective powders adhere to mucous surfaces might perhaps be laid down. Possibly some compound powder might be discovered, having a still greater degree of tenacity than either gallotannin, mimotannin, catechin, or either variety of kino or catechu. See also *Catechu.*

Krameriæ Radix.—HOCKAUF, C. & D. Diary 1899, p. 267, gives the percentage of ash as 1·7 to 7·0 per cent.

Lamellæ.—The four varieties of official discs not only are directed to be made of a given weight, and to contain a stated amount of the respective alkaloidal salts, but to be prepared with gelatin and some glycerin. The details of preparation have been left to the skill of the pharmacist, in accordance with the spirit of the remarks on pp. xiv and xv of the preface to the *Pharmacopœia.* Some critics have, however, suggested that Discs should not have been made an exception to the general rule of giving details of preparation for galenical processes. Such details, by LUCAS, will be found in C. & D. Diary 1899, p. 267.

Lard.—See *Adeps.*

Laudanum.—See under *Tinctura Opii.*

Limonis Cortex.—The official source is "Citrus medica." DRUCE, B. & C. D. XXX, 374, says "Citrus Medica" (capital M). HOLMES (through the REPORTER) agrees. See also under *Infusum Gentianæ Compositum.*

Linimenta.—"Why were all the liniments deprived of the word 'comp.'?" asks MACMILLAN, B & C. D. XXXIV, 786. The question involves the erroneous assumption that all the liniments possessed the adjective. If the critic means to ask why all the liniments were not accorded the word *compound*, the answer would be that they were not, and are not, all medically compound, whatever they all may be pharmaceutically. Of the fifteen liniments the names of thirteen have neither been deprived of a word, nor have been accorded a word; their names in the 1898 *Pharmacopœia* are exactly what they were in the 1885. *Linimentum Camphoræ Compositum* 1885 is now *Linimentum Camphoræ Ammoniatum*, a far more informing name, but the old name Compound Liniment of Camphor is retained as a synonym. *Linimentum Sinapis Compositum*, 1885, was compound from the medical point of view, it has been deprived of its compound character from the medical point of view—which is the prime point of view—hence the name is deprived of the word *Compositum.* See also under *Mistura Cretæ* and *Trochisci.*

Liniments.—See under *Oleum Olivæ.*

Linimentum Aconiti.—Officially, aconite root is exhausted to form an extremely strong tincture, in which a little camphor is dissolved. The B. & C. D. XXXIII, 517, considers that to dissolve an alcoholic extract of aconite in the requisite amount of spirit would be logical, quicker, and more economical. Which means that having made the strong tincture, as above, you are to evaporate that to an extract and then dissolve that in the requisite amount of spirit, reproducing the strong tincture; a procedure which would scarcely be quicker, economical, or even logical, while an article on the necessary alcoholic extract might have had to be specially provided in the *Pharmacopœia.*

Linimentum Camphoræ.—For a mode of quantitatively determining the percentage of Camphor, see a paper by LEONARD and SMITH, *Analyst*, XXIII, 281, or C. & D. LIII, 826.

Linimentum Terebinthinæ.—TOCHER, P.J. LX, 408, says: "Not only do I think that the proportions of ingredients are incorrect for a permanent emulsion, but also the directions for manipulation." "T. D." *op. cit.* 428, says: "I have made half a pint of it, and the result is perfection." The ED. P.J. adds: "The same result has been arrived at by another pharmacist, and we know for a fact that a specimen of the liniment made by the formula in question has kept perfectly for more than two years."

Linum.—Writers in P.J. LX, 415 and B. & C. D. XXXIII, 734, object to the alteration of the name *Lini Semina* of the *Pharmacopœia* of 1885

to the present *Linum*. Brevity is the excuse in pharmacy for giving, when practicable, single plant names to special parts of plants. Confusion is avoided by giving carefully drawn definitions. The plan cannot always be followed, indeed occasionally it becomes desirable to lengthen official names.

Linum Contusum.—This is now "Linseed reduced to a coarse powder." The 1885 name *Lini Farina*, Linseed Meal, is therefore no longer applicable. Besides, the name *linseed meal* has been held to apply correctly to ground linseed cake, P.J. LXI, 380, which is not what medical practitioners usually desire. This is the answer to the critics (see previous paragraph) who also objected to this alteration. GRIER, B. & C. D. XXXIV, 650, says the names "ought to be" *lini semina* and *lini semina contusa*.

Liquor Ammoniæ Fortis.—MERCK, C. & D. LIII, 348, remarks that this "yields deficient values when titrated with normal sulphuric acid, owing to the excessive escape of ammonia during the operation." This fact is of course well known to every pharmacist interested in the matter. The official statement respecting neutralisation prescribes only the strength not the manipulation. The critic appears to have taken the statement literally and to have overlooked the third complete sentence on page xiv of the Preface to the *Pharmacopœia*. MACMILLAN, B. & C. D. XXXIV, 785, alluding to the official "specific gravity 0·891," asks, "why not 0·880?" The B. & C. D. XXXIII, 517, had previously stated that "it has been found that the loss of ammonia is so rapid when the stopper is occasionally removed that the 0·891 gravity was safer."

Liquor Ammonii Acetatis.—This solution is officially prepared by neutralising a stated weight of non-effloresced ammonium carbonate by the ordinary aqueous acetic acid. The *British Pharmacopœia* of 1867 prescribed the opposite course, which, according to the criticisms of practical pharmacists, was more likely to lead to error, and did not so satisfactorily show the relationship of the solution to the solid ammoniacal salt used in its preparation. In the 1885 *Pharmacopœia* the solid salt was therefore made the starting-point. Reviewers of the 1898 *Pharmacopœia*, overlooking the useful practical criticisms of 1867 to 1885, offer the mere opinion that the acid would be the better starting-point. If their opinion were acted on in the next *Pharmacopœia*, would not practical pharmacists again object? More evidence in support of the opinion would seem to be necessary before the reversion can be usefully considered. *Vide* C. & D. Diary 1899, 512, under *Liquor Ammoniæ* [*sic*] *Acetatis*.

Liquor Ammonii Citratis.—A reviewer in B. & C. D. XXXIII, 517, noting that the ammonium carbonate is made the starting-point in preparing the solution of ammonium acetate, accuses the *Pharmacopœia* compilers of inconsistency in employing the acid as the starting-point in preparing solution of ammonium citrate. The compilers are consistent in employing as the starting-point in each case the material that can be most

trusted to be of constant composition, not forgetting in the latter case to show, as nearly as may be, the relationship of the solution to the solid ammoniacal salt used in its preparation. See also MOSS, B. & C. D. XXXIII, 592, under "*Liquor Ammonii Acetatis Fortior* and *Liquor Ammonii Citratis Fortior*."

Liquor Aurantii Concentratus. Liquor Aurantii Compositus Concentratus. See under *Liquores Concentrati.*

Liquor Bismuthi et Ammonii Citratis.—A writer in the C. & D. LII, 620, remarks: "The compilers have adopted Peter MacEwan's suggestion to make this from freshly precipitated bismuth citrate (C. & D. XXVIII, 17), but have worked out a better formula than the one recommended by him." But J. C. UMNEY, C. & D. LII, 955, says: "It will be found that operating precisely in accordance with the *British Pharmacopœia*, a considerable difficulty arises in taking into solution the whole of the precipitated citrate of bismuth. . . . By the addition of 175 grains of citric acid per pint, and an increased quantity of ammonia, in the final stage of the process, there is no difficulty in obtaining a quantity of bismuth in solution equal to 0·6 gramme of sulphide from 10 c.c." This is useful experience, but the experience of others should also be recorded. The official requirement is 0·55 gramme from 10 c.c.

There is still room for improvement in the mode of preparing this solution. The following additional references to the literature of the subject may prove useful to anyone taking up its further investigation. In 1857 SPILLER published, in *Journ. Chem. Soc.* X, 110, the fact of the solubility of bismuth oxide in solution of ammonium citrate. SCHACHT, P.J. 2, V, 302–3, applied the reaction involved in this fact to the preparation of a *liquor bismuthi* which he introduced to the medical profession; and he claimed this much at a meeting at which TICHBORNE described, *op. cit.* 301, the analysis and synthesis of bismuthic solution, and stated also that bismuth citrate was extremely soluble in solution of ammonia or ammonium citrate. WOOD advanced matters in P.J. 2, IX, 427, and in P.J. 3, II, 233. WILLIAMS, P.J., 3, III, 796, and MÉHU, P.J. 3, IV, 361, made the solution from the citrate.

Liquor Buchu Concentratus.—See under *Liquores Concentrati.*

Liquor Calcis Saccharatus.—DUNLOP, P.J. LXI, 344, says, "Why chlorides are objectionable in liquor calcis and not in liquor calcis saccharatus seems an anomaly." MACMILLAN, P.J. LXI, 682, said, "The calcium hydroxide for liquor calcis saccharatus should be washed the same as for liquor calcis." Not so. Chlorides are objectionable in liquor calcis because the latter solution is used in making argenti oxidum. Liquor calcis saccharatus not being so used, the washing of its calcium hydroxide is unnecessary. The REPORTER suggests to these two critics the following variation of their criticism: to the description of the mode of preparation of silver oxide add the employment of solution of calcium hydroxide free from chlorides, and omit from the liquor calcis details the said

washing and the requirement that it should be free from all traces of chlorides.

Liquor Calumbæ Concentratus.—This is prepared from "Calumba Root, in No. 5 powder." Moss, B. & C. D. XXXIII, 592, properly asks, "Can this be called a powder?" Yes, conventionally in pharmacy; for (*see* page xix of the Preface to the *Pharmacopœia*) comminutions of "different degrees of coarseness or fineness" are termed powders. Can the questioner suggest a better word, or can he afford editorial guidance by giving a sharp physical definition of a powder? Doubtless he has heard of materials used in guns and cannons, far coarser than the calumba comminutions in question, coarser even than a conventional No. 1 powder, but still conventionally termed gun-*powder* and cannon *powder*?

"Mix the expressed liquids, and heat for five minutes to 180° F." says the *Pharmacopœia*. "This must mean *at* 180°" say several critics. Of course it does. The directions are not simply "heat to 180°," but "heat for five minutes to 180°." There is no comma after the word "minutes."

"Calumba is one of the worst drugs on earth to treat by the maceration and pressure method," is a general statement by a reviewer in C. & D. LII, 614. A practical pharmacist alluding to "the instructions if followed in detail," J. C. Umney, C. & D. LIII, 24, describes no such fault in connexion with this method applied as directed. But an entirely unobjectionable method of producing this preparation would be welcomed. Gadd, P J. LXI, 179, says that the amount of menstruum is inadequate and that maceration and pressure do not yield a better result than slow percolation. [Gadd, P. J. LXII, 144, says "no one can be expected to macerate 10 ozs. of calumba root in 10 ozs. of water, and then to express any appreciable amount of liquid. Feb. 18, 1899.]

"The quantity of expressed liquid obtained from a drug like calumba depends on the power of the press, hence an element of uncertainty exists which is likely to cause variation in the product." Bird, P.J. LXI, 164. Would someone please supply figures, or other data, indicating the degree of medical or pharmaceutical importance of this element of uncertainty?

Liquor Caoutchouc.—The usefulness of the following note warrants its insertion in this Report for 1898, though its actual publication was seven days after the close of the year. "I find that if, instead of previously mixing the benzol and carbon bisulphide as the B.P. directs, the rubber be treated with the CS_2 alone, for an hour or two, until a jelly is produced, and then the benzol added, the preparation is ready for use in twenty-four hours." Catford, C. & D. LIV, 29.

Liquor Caryophylli Concentratus. Liquor Cascarillæ Concentratus.—See under *Liquores Concentrati.*

Liquor Chiratæ Concentratus.—Moss, B. & C. D. XXXIII, 593, considers that this solution would be improved if the chiretta were exhausted with water only.

Liquor Cinchonæ Acidus Concentratus.—See under *Liquores Concentrati.*

Liquor Digitalis Concentratus.—Similar remarks to the foregoing apply in this case.

Liquor Epispasticus.—See under *Cantharis.*

Liquor Ethyl Nitritis.—The ethyl nitrite is made by the proeess of HARE, *Gmelin's Handbook of Chemistry*, VIII, 471, and *Philosophical Magazine*, XV, 488 (1839). It was chemically investigated by DUNSTAN and DYMOND, P.J. 3, XVIII, 861; the praetical experienee of WILLIAMS, P.J. 3, VIII, 441, suggested the solution in absolute alcohol and addition of glyeerin; LEECH, P.J. 3, XIX, 490, demonstrated that this solution does not differ from spirit of nitrous ether in therapeutie effects when the two are of similar nitrous strength. The *solution* is far less unstable than the *spirit.*

Methods of estimating ethyl and amyl nitrites in solution are given by DIETZE, in C & D. LII, 400 (see also BEUTTNER, in *Apotheker Zeitung*), and by C. E. SMITH, P.J. LX, 565, from A.J.P. LXX, 273. Both methods are based on the interaetion of the nitrite with potassium ehlorate in the presenee of nitrie aeid. GRÜTZNER had previously utilised the interaetion for ordinary nitrites. Potassium ehloride is formed in quantity direetly proportional to the nitrite; and the quantity of ehloride, hence the amount of nitrite, ean easily be ascertained by direet or indireet assay with deeinormal silver nitrate solution. A eomparison of these methods with the offieial methods, both as regards aeeuraey and eonvenienee, is suggested by the REPORTER; C. E. SMITH'S paper, which oeeupies 12 pages of the A. J. P. and ineludes details for the assay of amyl nitrite as well as ethyl nitrite, being studied in its entirety.

Liquor Gentianæ Compositus Concentratus. Liquor Granati Corticis Concentratus. Liquor Hæmatoxyli Concentratus.—See under *Liquores Concentrati.*

Liquor Hamamelidis.—See *Hamamelis, and its preparations.*

Liquor Hydrogenii Peroxidi.—The C. & D. Diary 1899, p. 512, remarks that "a test for sodium should have been given, as the solution may be made by dissolving sodium peroxide in water aeidulated with hydroehloric acid." A mueh more practicable test for the detection of sueh a possible substitution is already given. MANN, P.J. LX, 494, stated as follows: "Liq. hyd. perox., one would suppose from a glanee at the B.P., required the 20 volumes of gas when estimated, but this was not the ordinary 20 volumes solution, as 10 volumes eame from pot. permang., making the solution simply 10 volumes." In this ease it would manifestly be the "glanee" of the individual, and not the phraseology of the *Pharmacopœia*, that would be in fault, for the explanation volunteered by the eritie is only a paraphrase of what is offieially stated in the sentenee eriticised.

A comparison of the various methods of assaying solution of hydrogen

peroxide was published by CARL E. SMITH in A.J.P. 1898, p. 225. (1) Titration with potassium permanganate. (2) Measurement of gas liberated by potassium permanganate. (3) Measurement of gas liberated by chlorinated lime. (4) Liberation of iodine from iodides by the solution in presence of an acid and titration of the liberated iodine by sodium thiosulphate. These methods were also applied to solutions of the peroxide containing such preservatives, &c., as glycerin, boroglycerin, boric acid, salicylic acid, benzoic acid, salol, acetanilide, ether. The author gives the preference to (4), and sums up as follows: "The thiosulphate method is simple, rapid, and accurate, and its accuracy is not lessened by the presence of the usual preservative agents, nor by large quantities of glycerin. It is applicable in all cases, so far as known. It may be said of gasometric determinations in general, that they require more time, attention, and apparatus than titration methods, and that the results obtained by them cannot be expected to approach the latter in accuracy, unless suitable corrections, requiring tedious calculations, are made for variation in temperature and atmospheric pressure at least." The attention of practical pharmacists is directed to the foregoing, with a view to the selection of a method of assay which shall at least be as simple and easy as that now official, and be as much more accurate and precise as is practicable.

Liquor Iodi Fortis.—MCWALTER, B.M.J. 1898, 2, 1058, objects to the name as "the fanciful term under which Linimentum Iodi now masquerades." As a reply to this criticism, a comment from B. & C. D. XXXIII, 517, may be quoted. "The principal alteration, that of calling *Lin. Iodi*, *Liq. Iodi Fortis*, is probably advantageous, as it was used more as a pigment than as a liniment." Yes, the liquid was too strong to be regarded or used as a liniment, to be rubbed on, it was more like a solution of a pigment, to be painted on.

The same critic further remarks, *op. cit.*: "The small quantity of glycerine which the former preparation contained prevented it from having too corrosive an action on the skin, but this has been removed for some obscure reason." The reason is patent. The glycerin kept the residue too moist, hence was medically undesirable. Even in the small proportion, a little over 2 per cent., in which the glycerin was ordered in the 1885 formula, it was not easy to localise the effect of the application, owing to interference by the clothing before the solution, by drying, could be kept to the desired area. MARTINDALE, P. J. 2, XI, 602, thought that this small quantity would not be open to the medical objection, but it is.

For the determination of the alcohol in *liquor iodi fortis* and in *tinctura iodi*, GUNN, P.J. LXI, 330, recommends the following preliminaries: "Add just sufficient of a strong aqueous solution of sodium hyposulphite to decolorise, and then a sufficiency of caustic potash to use up all sulphurous acid formed. This sufficiency will be found to be rather a large quantity. If 50 c.c. liq. iodi fort. have been used it will be necessary after decolorising with the hyposulphite to use at least 10 grammes of the

potash, or it will save weighing if about $3\frac{1}{2}$ inches of the caustic potash in sticks is used. Distillation may then be proceeded with, and the usual calculations made."

Liquor Lupuli Concentratus.—See under *Liquores Concentrati* on pages 67 and 68.

Liquor Magnesii Carbonatis.—Moss, B. & C. D. XXXIII, 593, asks, "Is it necessary to give a process?" It may not be necessary in the next *Pharmacopœia.*

Liquor Pancreatis.—Moss, B. & C. D. XXXIII, 593, asks, "Would not *Liquor Pancreaticus* have been preferable?" The answer is supplied by Leech, *Medical Chronicle*, April and May, 1898: "A solution of pancreas has long been used under the name of liquor pancreaticus. It has, been, however, a proprietary preparation. By introducing the liquor pancreatis and adopting to a great extent the formula for its production, which was devised by Sir William Roberts, the Medical Council have recognised the value of the work which this observer did on the digestive power of the pancreatic secretion."

Liquor Plumbi Subacetatis Fortis.—This solution, according to Haussmann, P.J. LX, 23, may be made by a modification of the cold maceration process of the Austrian Pharmacopœia.

Liquor Rosæ Acidus Concentratus.—See under *Liquores Concentrati* on pages 67 and 68.

Liquor Sarsæ Compositus Concentratus.—Gadd, P.J. LXI, 179, alluding to the official directions, says: "If the mixed infusion and decoction be concentrated to sixteen fluid ounces, a pint of filtered product cannot be obtained. It should be concentrated to eighteen fluid ounces." Even if the critic's remark is well founded, the official statement that "the product should measure one pint," coupled with the skill and judgment which the operator is officially (Preface, xiv and xv) assumed to possess, should remove any difficulty that otherwise might arise on account of the filtered product not always being identical in volume. But J. C. Umney, C. & D. LIII, 25, says that "the preparation is in every respect satisfactory."

Liquor Scoparii Concentratus.—See under *Liquores Concentrati* on pages 67 and 68.

Liquor Sennæ Concentratus.—J. C. Umney, C. & D. LIII. 25, notices that "this liquor is prepared by repercolation, whilst the liquor for preparing the syrup is made by double maceration. There appears no reason for this difference." Whichever of the two processes proves in practice to be the better will be adopted, doubtless, to the exclusion of the other in the next *Pharmacopœia.* Bird, P.J. LXI, 164, raises the question of volume of product, as asked by Gadd (see previous paragraph). The answer is identical. See also a similar answer by Farr, P.J. LXI. 234, col. ii.

Liquor Sodii Arsenatis.—See *Sodii Arsenas.*

Liquor Uvæ Ursi Concentratus.—See under the next article—*Liquores Concentrati.*

Liquores Concentrati.—Either of the liquids itself is not a concentrated infusion or even a concentrated decoction ; such things are either impossible of production or are not permanent. But when diluted with water the products are medically useful equivalents of infusions and decoctions, though, unlike the official infusions and decoctions, the liquids thus diluted contain a little alcohol. These ten *Liquores* have been commented on by some critics without due consideration of the exact medical position accorded to the preparations on page xvii of the preface to the *Pharmacopœia.* It may be well therefore to quote the following exposition by LEECH, *Medical Chronicle*, April and May, 1898 : "Concentrated solutions of chirata, krameria, quassia, sarsaparilla, senega, rhubarb, senna, and serpentaria are important official innovations. It is well known that when infusions are ordered they are rarely made, even by chemists, according to the pharmacopœial directions, but so-called concentrated infusions, supplied by manufacturing chemists, are used instead. In surgeries fresh infusions and decoctions are almost unknown. Where infusions are made of drugs containing essential oils, the fresh infusion differs materially from the substitute made from concentrated preparations, but the difference is hardly recognisable in the case of substances containing no essential oil. The drugs of which the concentrated solutions have been made official do not contain essential oils, and it will be difficult to tell the difference between mixtures made with these solutions and those made with fresh infusions. Nevertheless, the Pharmacopœia of 1898 gives no authority for the use of these solutions when infusions are ordered. It simply states that the concentrated solutions made official may be ordered instead of infusions, and it gives a formula for making these concentrated solutions. All of them contain a certain proportion of alcohol, and they are, therefore, not called concentrated infusions. The same, however, is true of the concentrated preparations called infusions, which are now so largely used. It is to be hoped that this suggestion, as to the use of concentrated preparations instead of infusions, will be acted upon. They will be more uniform in composition than infusions, and ought in time to replace them." A pharmacist, BIRD, P.J. LXI, 164, also gives a useful view of the position of these concentrated solutions, thus: "Considerable doubt exists as to the manner in which the compilers of the Pharmacopœia intend the Liquores Concentrati to be employed. May I suggest that the idea in their minds was that a medical man when writing a prescription would order the official dose of a liquor in place of the corresponding fresh infusion, and I think this view is supported by the statement in the preface that ' the products of their dilution may be prescribed by practitioners in place of the corresponding official infusion.' Naturally, in a mixture '*Aquæ ad*' would give the product of their dilution." A medical practitioner, PARRY, B. & C. D. XXXIV, 35, takes the same view, thus: "The

concentrated liquors, which consist of those of cusparia, chirata, rhubarb, quassia, krameria, senna, senega, and sarsaparilla, are most useful preparations. They are far more stable and accurate than their corresponding infusions or decoctions, and mark an improvement much to be welcomed in this class of preparations. They are sure to make a frequent appearance in prescriptions in the future." Another pharmacist, HYSLOP, P.J. LXI, 119, says "It is to be hoped, therefore, that the liq. concentrati—ten in number—may be added to in the near future, not as a substitute for the corresponding infusa, but that in course of time prescribers may become so accustomed to their use as to discard the less satisfactory preparations."

Respecting strength. The C. & D. Diary 1899, 511, remarks: "their strength is 1 to 9, instead of the popular 1 to 7. They are not really much the worse for that; still the strength has been condemned." HYSLOP, P.J. LXI, 119, is in favour of 1 to 9. The simple case is that 1 in 8 relates to drachms in an ounce, part of a system passing away; 1 in 10 is part of that decimal system by which all the world counts, and which is every year tending more and more towards universal adoption for weights and measures. In relation to strength also, or rather potency, GADD, P.J. LXI, 179, says "The process by which the concentrated solutions of chiretta, cusparia, krameria, quassia, rhubarb, senega, and serpentary are prepared is elaborate and troublesome, but does not exhaust the drugs." The answer might well be that the processes for the official infusions, or for the domestic infusion called tea, rarely exhausts the materials, and indeed that exhaustion is sometimes quite undesirable; but J. C. UMNEY, P.J. LXI, 232, replies to the assertion of GADD, respecting non-exhaustion, thus: "In the case of the percolated liquors that is not the case, provided the percolation be conducted slowly and in accordance with the terms of the *Pharmacopœia*."

As to the extension of the use of, and the further official adoption of, galenical "concentrated solutions" generally, full encouragement has in the foregoing five pages been given to pharmacists to make such researches as shall certainly result in the inclusion in the next *Pharmacopœia* of many more *liquores concentrati* if only these are reasonably permanent and the products of their dilution with water have sufficient flavour and aroma to make them reasonably comparable with the corresponding infusions or decoctions. The respective *Liquores Concentrati* alluded to would be *Aurantii* and *Aurantii Compositus*, *Buchu*, *Caryophylli* and *Cascarillæ*, *Cinchonæ Acidus*, *Digitalis*, *Gentianæ Compositus*, *Granati Corticis*, *Hæmatoxyli*, *Lupuli*, *Rosæ Acidus*, *Scoparii*, *Uvæ Ursi*, and possibly others.

Specimens of the foregoing and of other useful *Liquores Concentrati*, prepared by various makers and by competent operators under the responsibility of the Editor, were submitted to the Compilers of the *Pharmacopœia*. Those now official were alone selected, but the hope may be expressed that due pharmaceutical research will sooner or later render possible the official recognition of others.

Lobelia.—DOTT, C. & D. LII, 463, reports that a sample, "especially powdered, gave 12·58 per cent. of ash."

Lotio Hydrargyri Nigra.—HYSLOP, P.J. LXI, 119, reported that the official mucilage of tragacanth in this lotion caused clots. His experiments showed that the 30 grains of mercurous chloride shaken not with mucilage but with 5 fluid drachms of saccharated solution of lime and sufficient distilled water to produce 10 fluid ounces resulted in a satisfactory lotion. DUNCAN, P.J. LXI, 539; C. & D. LIII, 831; B. & C. D. XXXIV, 622, also found that the mucilage of tragacanth caused undesirable clotting. He preferred the 1885 formula.

Lupulus.—See under *Rosæ Gallicæ Petala.*

Magnesia, Levis et Ponderosa.—That magnesium oxide, light or heavy, absorbs moisture or carbonic anhydride, or both, according to the aërial or other conditions under which the particles of the oxide are exposed, has long been known. See references in GMELIN'S Chemistry, Cav. Soc. Trans., 1849, vol. i, p. 223. Moisture, carbonic anhydride, or both, being yielded by a commercial sample of magnesium oxide, supplied either in the free state or in admixture, the questions arise as to whether the sample was badly prepared, has been unduly exposed to the air, or has been deliberately adulterated with magnesium hydrato-carbonate; and the further question arises as to how far it might be possible to lay down, in the *British Pharmacopœia*, conventional quantitative limits of hydrate or carbonate in such oxide. Medical and pharmaceutical consideration of these questions will be facilitated by reference to the investigations, corespondence, and evidence in prosecutions under the Sale of Food and Drugs Acts, during the past year, 1898. See P.J. LX, 399, 428c; LXI, 253, 280, 389, 539; C. & D. LIII, 461, 462, 495, 515, 521, 526, 559, 611, 744, 1017; B. & C. D. XXXIII, 488. The chief researches are by J. C. UMNEY, C. & D. LIII, 515, who in relation to the official compound of magnesium oxide, *Pulvis Rhei Compositus*, or "Gregory's Powder," gives, *inter alia*, figures showing the varying proportion of ash yielded by the rhubarb and ginger in the powder; PAUL and COWNLEY, P.J. LXI, 389, who comment on the different processes for estimating the moisture and carbonic anhydride which may have been absorbed by, and subsequently separated from, the oxide, and show what proportions of moisture and carbonic anhydride are absorbed by the oxide under varying circumstances and during varying periods of atmospheric exposure; and by DUNCAN, P.J. LXI, 539, who states, *inter alia*, that the rate of absorption of carbonic anhydride by magnesium oxide largely depends on the concurrent presence or absence of moisture.

As regards magnesium oxide, the question of official limits or standards —if indeed any be practicable—has its medical, chemical, pharmaceutical, legal, and moral sides, hence should be considered very broadly and by different authorities. In the present case the presence of a little hydrato-carbonate in magnesium oxide may not medically be of much importance,

but, as a rule, the high standards of quality prescribed in the *Pharmacopœia* should not, in the opinion of the REPORTER, be reduced merely to facilitate commerce or to render more easy the working of the Sale of Food and Drugs Acts. The chief standard of quality at present official is as follows: "When heated to dull redness it should lose little or no weight," and one of the leading public analysts has stated, C. & D. LIII, 559, that "no analyst of experience ever interprets this standard otherwise than in a liberal spirit, and, were traces of moisture and CO_2 absorbed, would never cause condemnation at his hands." Oddly enough, no critic seems to have noticed that while the test just quoted would allow for the presence of a little hydrato-carbonate in light or heavy magnesia, another requirement precludes the presence of carbonate. The presence of traces of chlorides or sulphates is allowed; clearly traces of carbonates should directly as well as indirectly be permitted.

HOSEASON, B. & C. D. XXXIV, 651, thinks that the variability in composition of the light and heavy magnesium oxide should be checked officially by estimation as pyrophosphate. Is such refinement required? It is difficult but not altogether impossible to draw a line between abstract scientific research and applied scientific research.

Mel Boracis.—"There is not sufficient glycerin in mel boracis B.P. to dissolve the borax." C. & D. LIII, 1059. In the C. & D. Diary 1886, also, double the proportion of glycerin—which was the same in the 1885 as in the 1898 *Pharmacopœia*—was suggested. But practical pharmacists, MILLHOUSE, P.J. 3, XVI, 396, and CRIPPS, P.J. 3, XVI, 620, commended the 1885 addition of glycerin—which was INGLIS CLARK'S and was not in the formula of the 1867 *Pharmacopœia*, in any proportion—hence the 1885 proportion is maintained in the 1898 book. Even if there were "not sufficient glycerin . . . . to dissolve the borax," would that matter? The official directions are to "mix" the borax, glycerin, and clarified honey, and the C. & D. admits that these being rubbed in a mortar a solution will result "in time," though warmth undoubtedly accelerates solution. Now, considering that in 1898 (*see* Preface, pages xiv and xv) pharmacists are credited with full knowledge, skill, judgment, and training, their use of a mortar and of warmth does not, on every occasion, demand official prescription.

Mel Depuratum.—The 1885 *Pharmacopœia* gave the percentage of ash as 0·2; the 1898 as 0·25. DOTT, C. & D. LII, 463, found 0·24 in a genuine sample, but only 0·01 (of sulphates) in a sample doubtless largely adulterated, as he says, with pure glucose. He usefully adds the remark that "An exceptionally small proportion of inorganic matter may suggest adulteration as well as an excessive amount."

Menthol.—Officially this substance is botanically traced to "Mentha arvensis, *DC.*, *vars.* piperascens et glabrata, *Holmes*; and of Mentha piperita, *Sm.*" DRUCE, B. & C. D. XXXIII, 734, offers the following criticism on these names:—"The botanical authorities given above exhibit

several errors. In the first place, Linnæus founded the species *M. arvensis*, in the first edition of the 'Species Plantarum' of 1753, on p. 577, which much antedates De Candolle. Again, the Peppermint was first certainly described by Hudson in the 'Flora Anglica' of 1762, which much precedes Smith's description in the 'Flora Britannica' of 1799. There is a *M. piperita* of Linnæus in the 'Species Plantarum,' l.c.: but the plant of Linnæus is said to be only a variety of *M. aquatica*. The varieties of *M. arvensis* were described by Mr. E. M. Holmes in the 'Pharm. Journal,' 3 ser. (1882), p. 381; but he also, in his recapitulation, says he would recommend that, for convenience, the name of *M. arvensis* f. *piperascens* should be retained for the Japanese peppermint plant, and that of *M. arvensis* f. [forma] *glabrata* for the Chinese one; but in other parts of the paper he uses the names var. *glabrata* and var. *piperascens*. The Chinese peppermint plant so exactly agrees with the specimen of *M. canadensis* var. *glabrata* that Mr. Holmes considered it should be referred to *M. arvensis* under the name of *M. arvensis* var. *glabrata*."

HOLMES (through the REPORTER) replies:—"Under *Mentha arvensis*, *DC.* is given as the authority for the name because De Candolle takes a wider view of the species than Linnæus, and distinctly states that the species is polymorphic. The varieties *piperascens* and *glabrata* scarcely come under the descriptive limits given by Linnæus, 'floribus verticillatis foliis *ovatis* acutis serratis, staminibus corollæ æquantibus.' MENTHA PIPERITA, Smith, should *not* be cited as Hudson, since that author describes a plant which is *not the official plant*, but has rounded heads of flowers like *aquatica*. His description is 'Mentha piperita, floribus *capitatis* solitariis terminalibus, foliis *ovato-oblongis* serratis, staminibus corolla brevioribus,' and he quotes Ray's figure, in Ray Syn., p. 234, tab. x, f. 2. This appears to be Smith's *Mentha aquatica* var. *piperita*. Linnæus' Mentha piperita, as observed in his herbarium, is a plant with *rounded* flower heads, and flowers with *hairy pedicels* and *calyces*, but the leaves are *lanceolate* and *acute like the official peppermint*. It is the form of peppermint cultivated in Scandinavia, but practically unknown in this country. In his herbarium, the official peppermint also occurs, but is labelled 'An mentha piperita seu spicata nec capitata?' without any locality. It is to Sir J. E. Smith that we owe the clear definition of the official peppermint published in his paper on mints in the Transactions of the Linnean Society (1) v, p. 189. The difference between these peppermints is well illustrated in Sole's Menthæ Britannicæ. It is, therefore, Smith's name, and not Hudson's, that should be given as the authority for the *Mentha piperita* of the *Pharmacopœia*. Sole groups the mints under 'Spicatæ,' 'Capitatæ,' and 'Verticillatæ.' Smith's plant comes under the 'Spicatæ,' as *Mentha piperita officinalis* (tab. vii), Hudson's plant under the 'Capitatæ' as *Mentha piperita vulgaris* (tab. vii), but Linnæus' plant, not being English, does not appear at all in Sole's work. A third variety of peppermint is, however, figured by Sole on tab. xxiv, and called *Mentha piperita sylvestris*. This closely resembles his *Mentha palustris*, except in the slightly longer leaves. In inflorescence it resembles *M. piperita officinalis*, and in taste it resembles peppermint, but has also a coarser

flavour. As the Japanese and Chinese peppermints belong to the Verticillatæ section, it follows that there are peppermints in each of the principal groups of mints. The distinctive features of the Japanese and Chinese peppermint plants have already been pointed out, P.J. 3, XIII, 382–3."

Mineral Oils, Pharmacology of.—See under *Paraffinum Molle.*

Mistura Cretæ.—Cox, P.J. LX, 495, probably with a desire to keep the three powders of the formula mixed ready for trituration with the cinnamon water as required in dispensing, asks, "why not contain an even quantity of powder to the ounce?" The quantity is, at present, 42·89 grains of powder to the ounce, practically the round number 43. But if the tragacanth had been ordered to be, not 15 grains as now for 8 fluid ounces of mixture, but 16 grains, that is, a round number of 2 grains per ounce, the mixed powders would have been in a quantity of almost exactly 43 grains per ounce. The metric quantity of tragacanth for the 160 cubic centimetres of mixture would then have been practically 0·75 gramme instead of, as now, 0·7. Macmillan, B. & C.D. XXXIV, 786, in speaking of the liniments (see *Liniments*), said they "were all compounds, and might as well have had comp. added to them as mistura cretæ." But mistura cretæ has not and never has had the word composita attached to the name. Possibly the critic is misreported. In any case he is probably confusing a pharmaceutical compound, which this mixture is, with a medical compound, which it is not; and is forgetting that the official addition or omission of a medicine *and the name under which it is to be prescribed* are primarily matters for medical consideration and decision. See also under *Linimenta* and *Trochisci.*

Mistura Olei Ricini v. *Mistura Olei Morrhuæ.*—The C. & D. LII, 620, remarks: "We cannot help saying that there was far more need for the insertion of a mistura olei morrhuæ than for the retention of this castor-oil mixture." If this positive statement is founded on records, by practising pharmacists, of the relative frequency of a mistura olei morrhuæ in physicians' prescriptions, it will be useful to the medical compilers of the next *British Pharmacopœia.* If founded on quite another form of public demand, well, it may still be useful to those compilers. But, as an unqualified dictum, is it not one rather for medical than pharmaceutical utterance?

A correspondent of the C. & D. LIII, 1027, finds that mistura olei ricini is "a bad-keeping preparation." The Editor C. & D. usefully replies that it "is intended to be prepared extemporaneously."

Mistura Sennæ Composita.—"Synonym—Black Draught." Boardman, B. & C. D. XXXIII, 665, asks: "When black draught is now inquired for, will it be necessary to give the new preparation, or will it be allowable to give the old form?" The answer to all such questions is given in Clause III of the *Medical Act*, 1862, reprinted in the second paragraph of the Preface to the *British Pharmacopœia* of 1898, p. vii–viii, and is decisive

for the new preparation. A new *Pharmacopœia* supersedes an old *Pharmacopœia*. Is there any difficulty in a purchaser showing, or in a vendor ascertaining, that some other than the official variety is desired, and in that desired variety being supplied accordingly; of course with a distinctive label? In this connection the following information from the C. & D. LII, 620, will be found useful. "Alterations have been made in the formula which may induce the Board of Trade to allow mist. sennæ co., B.P., to be used for ships' medicine-chests. At present it is inconvenient, for many chemists, to have two preparations."

Momordicinum.—See *Elaterinum.*

"*Monographs.*"—See a footnote to *Unguenta.*

Morphinæ Hydrochloridum.—One of the official requirements is that "It dissolves without coloration in strong sulphuric acid." MERCK, C. & D. LIII, 348, says that "Its solution in sulphuric acid is of a pale rose colour." Will some worker make the experiment on some samples of British as well as foreign manufacture, during the next year or two, and publish the results?

Morphinæ Tartras.—The official statement as to manufacture is that it "may be prepared by the combination of morphine and tartaric acid in molecular proportions." DOBBIN, B. &. C. D. XXXIV, 809, says, "The author of the monograph presumably meant to write 'equivalent' instead of 'molecular.'" No, he meant molecular, the formula in the sentence criticised showing the number of molecular weights or proportions of the one substance in combination with those of the other.

Myrrha.—This is officially described as "A gum-resin, obtained from the stem of *Balsamodendron Myrrha*, Nees. . . . and probably other species." DRUCE, B. & C. D. XXXIII, 734, thus writes, "The botanical name which has been adopted for Myrrh is much antedated by that of *Commiphora*, which was established by JACQUIN in the 'Plantarum rariorum horti cæsarei Schönbrunnensis descriptiones et icones,' vol. ii. (1797), p. 66, whereas the genus *Balsamodendron* was not established until 1824, by KUNTH, in 'Annales Science Nat.' ser. I. vol. ii. p. 348. Other Pharmacopœias on the Continent have adopted JACQUIN'S name, and it is chosen in the 'Kew Index,' so that no valid reason exists for retaining *Balsamodendron.* The botanical name of the official Myrrh should be *Commiphora Myrrha*, ENGLER, in DC., Mon. Phan. vol. iv. p. 10." HOLMES replies (through the REPORTER) as follows: "The genus *Commiphora* was established by JACQUIN on *Commiphora madagascariensis*, of which he knew and described the male plant only. As an imperfectly described genus, therefore, it should not be upheld, and it is much to be regretted that ENGLER in his papers on the *Burseraceæ* should have changed the name *Balsamodendron*, which is not only appropriate, but had been in use since 1824. JACQUIN himself says in his description 'Solum marem possidemus, ut maneat character incompletus.' He

appears to have supposed that the plant yielded the Madagascar india-rubber (which comes from *Vahea madagascariensis*, an Apocynaceous plant), since he says of his Commiphora, 'Madagascaricnsibus vocatur Vaé et Voahéne, Gallis Mauritianis Gommi elastique, dat enim gummi illud elasticum quod celeberrimus Fourcroi examinavit.' The grounds for using the name *Commiphora* are therefore of the slightest. The genus *Balsamodendron*, on the other hand, is well characterised and should be upheld. Moreover, the name of the Myrrh plant cannot be *Balsamodendron Myrrha*, of *Engler*, since the plant he so named does not, according to his own statement, yield any gum resin."

The following contributions to the *characters and tests* of myrrh are offered by DIETERICH, C. & D. LIII, 131. "For ash 10 per cent. as a maximum, and for the alcohol insoluble portion 70 per cent. the highest figure." Perhaps some worker will publish his experience of these and other characters of samples of good myrrh during the next year or two.

A little careful pharmaceutical research and general investigation should enable the following two questions to be answered. (1) Can the standard for myrrh, for use in medicine, be improved? (2) Can any such differentiation of the other commercial grades of myrrh be devised as will meet a purchaser's demand under the Sale of Food and Drugs Acts?

Nomenclature, Botanical.—See under *Aloe Barbadensis, Araroba, Aurantii Cortex, Balsama Peruvianum et Tolutanum, Cambogia, Capsici Fructus, Cardamomi Semina, Cimicifugæ Rhizoma, Cocæ Folia, Copaiba, Cusso, Filix Mas, Fœniculi Fructus, Gentianæ Radix, Menthol, Hamamelidis Folia, Myrrha, Oleum Menthæ Piperitæ, Oleum Menthæ Viridis, Oleum Pini, Oleum Rosæ, Pareira Brava, Pruni Virginianæ Cortex, Quillaiæ Cortex, Sarsæ Radix, Sinapis Nigræ Semina, Veratrina.*

Nomenclature, General.—See under *Asafetida, Calcii Carbonas Præcipitatus, Cascarilla, Catechu, "Compound," Elaterinum, Extractum Ergotæ, Ferrum Redactum, Glycerinum, Ipecacuanhæ Radix, Kino, Linimenta, Linum, Linum Contusum, Liquor Iodi Fortis, Liquor Pancreatis, Mistura Cretæ, Mistura Ferri Composita, Oleum Eucalypti, Resina, Spiritus Ætheris Nitrosi, Spiritus Chloroformi, Sulphur Præcipitatum, Unguentum Atropinæ, Veratrina.*

Notation, Chemical.—See under *Acidum Gallicum* and *Phenacetinum.*

Nux Vomica.—STOEDER, a Dutch Professor, made the following statement in the course of some remarks on the *British Pharmacopœia* in an address delivered at the opening of the 1898–99 session of the University of Amsterdam, and translated in the B. & C. D. XXXIV, 516. "The three preparations of strychnia, the extract. liquidum with 1·5 per cent., the extract. siccum with 5 per cent., and the tincture with ¼ per cent., ought not, in my opinion, to appear in the same *Pharmacopœia*." The translation shows no grounds for this opinion and affords no indication that the

critic is sufficiently familiar with the medicine and pharmacy of our empire to warrant him in casting this reflection on the discretion and judgment of the compilers of the *British Pharmacopœia.*

Olea. Oils, Essential.—DUNLOP, also SUTHERLAND, P.J. LI, 530, would have added to the official characters and tests various colour reactions. The latter, however, are not uniformly trustworthy.

Wonder has been expressed at the withdrawal of official requirements as to the geographical sources of many official drugs. Reasons for this course are given under *Oleum Lavandulæ* and *Rosæ Gallicæ Petala.*

In the following twenty-two notices of comments and criticisms, published on the official essential oils during 1898, will be found some useful contributions to the next *British Pharmacopœia*, but they all should be read in connexion with the many researches by J. C. UMNEY, published in the three British journals of pharmacy between the dates of the last and present *British Pharmacopœias.*

Oleum Anethi.—The official minimum rotation is to be 70° to the right. PARRY, C. & D. LIII, 54, thinks that "a maximum limit might have been given, however." Why? The same critic says, *op. cit.*, that the official expression, "rotate the plane of a ray of polarised light," is incorrect. Why? This time he gives an answer by anticipation. He says, "The phenomenon in question is the rotation of the plane of polarisation." The firm of SCHIMMEL, P.J. LXI, 459, record a specific gravity which they say shows "that English oil has not always the high specific gravity required by the *British Pharmacopœia* (0·905 to 0·920)." But the figure they record, 0·906, itself only illustrates the fallacy of their assertion. DOWZARD, C. & D. LIII, 749, gives average specific gravities of dill oil obtained by him during 1898, as 0·907 to 0·915. These also support the official figures. J. C. UMNEY, Y.B.P. 1898, 376, says "the characters of the essential oil prescribed by the new *Pharmacopœia* should be rigidly adhered to, thus excluding the Indian and the Japanese varieties.

Oleum Anisi.—PARRY, C. & D. LIII, 54, says, "The maximum lævorotation ought to be given—certainly not more than −4°," also that sp. gr. 0·975 to 0·920 affords "a wide limit." Respecting specific gravity at other than 60° F. (15·5° C.) see *Oleum Rosæ.*

Oleum Anthemidis.—PARRY, C. & D. LIII, 54, notes the absence of the optical rotation character. It did not seem to be called for.

Oleum Cadinum.—DUNLOP, B. & C. D. XXXIV, 620, remarks on the absence of figures showing exact degree of solubility in ether, chloroform, and alcohol. ADAM, *Bulletin de la Soc. Chim. de Paris*, XIX, 580, found five commercial samples to differ in specific gravity from 0·9874, taken at 0° C., to 1·031, even when the latter was at 14° C.; the viscosity of the samples varying as the figures 32 and 360.

Oleum Cajuputi.—PARRY, C. & D. LIII, 54, would place the minimum

specific gravity at 0·919, rather than the official 0·922; and he would make the qualitative phosphoric acid test a quantitative one. If he has important medical and pharmaceutical reasons for this recommendation, would he please publish them, and give a detailed phosphoric process? DUNLOP, B. & C. D. XXXIV, 620, would append colour reactions. Why?

Oleum Carui.—The firm of SCHIMMEL, P.J. LXI, 459, suggests the official recognition of pure carvol in place of the oil—an excellent suggestion *if made on pharmacological or therapeutical data*, which seems questionable.

Oleum Caryophylli.—PARRY, C. & D. LIII, 54, says, "the qualitative tests are absolutely valueless." To him as an analyst that may be so, but to the medical practitioner whose standard at present is *cloves*, the official words "having the strong odour and taste of cloves" mean much: colour also. The critic further says, "I consider it a very serious omission that with this oil, so well understood, no attempt at estimating the eugenol is made." Serious for an analyst possibly, but, in the absence of knowledge as to which constituent the medicinal virtue of oil of cloves is due, scarcely serious medically; at all events the critic has no pharmacological reason for stating that the absence of the test is serious. If the critic, or some other chemist, would isolate the pure constituents of the oil, and place these in the hands of a medical man who would undertake a research on their relative pharmacological values, the medical profession might obtain the clove-substance they need and have it made official, and, if they did, then, so far from the genuineness of the oil being of importance medically, the oil would sooner or later disappear from the *Pharmacopœia* altogether: pending which condition of things the profession must fall back on characters and tests which will at least insure genuine oil. If the specific gravity limit, "not below 1·050," and the other official characters do not suffice for that, by all means add the requirement of a minimum yield of 80 per cent. to a ten-per-cent. potash solution. See the 18th edition of the U.S.A. "Dispensatory," p. 930.

Oleum Cinnamomi.—In this case PARRY, C. & D. LIII, 54, praises the official paragraphs but, logically enough as an analyst, says "if the value of the oil is to be at all based on its content of cinnamic aldehyde, as it is in the trade, I see no reason why oil of cassia should not be allowed in with that of Cinnamomum zeylanicum." The REPORTER would put the case thus: if the medicinal value of the oil is due to cinnamic aldehyde, then let us in due time have cinnamic aldehyde, no matter whence obtained, in the *Pharmacopœia*, and let us dismiss the oil of cinnamon altogether. The "if," however, has first to be dealt with.

Oleum Copaibæ.—See under *Copaiba*.

Oleum Coriandri.—PARRY, C. & D. LIII. 54, would insert an optical rotation test of + 5 to + 15 to exclude terpenes. This may follow if the official alcohol-solubility should prove to be insufficient.

Oleum Declinæ.—See *Paraffinum Liquidum.*

Oleum Eucalypti.—The year 1898, now under review in its relation to the *British Pharmacopœia*, has brought forth the usual annual contribution of new facts respecting the not far short of 150 different species of eucalyptus trees—trees and shrubs, nearly half of which appear to bear leaves furnishing commercially tangible proportions of volatile oil. No two species appear to furnish identical oil, if indeed any one species furnishes oil of quite identical properties from year to year. The difficulty, in these circumstances, of defining, under the single broad official term *oil of eucalyptus*, an oil on which medical practitioners can uniformly rely for the production of desired therapeutical effects, will be obvious. Add to this condition of things the fact that our knowledge of the effect of eucalyptus oil on the healthy or on the unhealthy human frame, in other words pharmacology and therapeutics, cannot yet enable us to state which constituent of eucalyptus oil is pharmacologically or therapeutically active and which inactive, and it will be seen that the difficulty alluded to is not only obvious but not yet surmountable. BAKER and SMITH, of the Sydney Technological Museum, continue their investigation of the oil-yielding eucalypts, communicating their facts, as they arise, to the Royal Society of New South Wales. For a short notice of their more recent work *see* C. & D. LIII, 519. No fresh investigation has been made of the Californian oil-bearing eucalypts. PARRY, P.J. LXI, 198, and Y.B.P. 1898, 345, has published a note on the oil of *E. toxophleba*: an oil to avoid in pharmacy, apparently. The firm of SCHIMMEL, P.J. LXI, 458, has examined the oils of *E. rostrata*, *E. resinifera*, and *E. obliqua*, all grown in Portugal. OCKENDEN, C. & D. LIII, 713, gives details under which the official phosphoric acid test may be made quantitative. Two or three pharmaceutical critics would have displaced the official oil by pure *eucalyptol*—now generally termed *cineol.* Such a procedure would have relieved the compilers of the 1898 *Pharmacopœia* from the compilation difficulty already mentioned, but, alas, neither pharmacologists nor therapeutists have yet spoken the word that would alone warrant the course suggested. Eucalyptol is indeed official in the still current U.S.A. *Pharmacopœia* of 1890, but the medical demand is still for the oil. The action of the compilers of that *Pharmacopœia*, in view of a "1900" issue within the next two or three years, will be looked forward to with much interest.

Chemistry has outstripped pharmacology in the investigation of the group of oils known officially as *oleum eucalypti.* These appear to have extremely valuable medicinal properties, especially antiseptic properties. Could not some pharmacological effort be made to reduce the chaotic confusion caused by the competitive claims of now this and now that "brand" of the scores of known eucalyptus oils? The pure isolated constituents of the oils can easily be obtained. The effect of each separate constituent on the healthy and on the unhealthy human frame is what we all want to know. Authoritative pharmacological and therapeutic knowledge once gained, every national Pharmacopœia in the world would

only too gladly follow the lead. Perhaps BAKER and SMITH (*vide ante*) could associate with themselves a pharmacologist in their further researches.

Oleum Juniperi.—The firm of SCHIMMEL, well-known oil producers, assure all interested persons, B. & C. D. XXXIV, 553, that the official statement that this oil is "distilled from the unripe green fruit" originated with ZELLER, is no longer true, and that in fact any sample of the oil so produced would be found to be inferior in quality to oil distilled from ripe fruits. The official figure of solubility in a mixture of equal parts of absolute alcohol and 90 per cent. alcohol, namely, 1 in 4, is, says the SCHIMMEL firm, *loc. cit.*, only applicable to the fresh oil, the solubility perceptibly diminishing within a few weeks of the isolation of the oil. PARRY, C. & D. LIII, 54, says "a maximum lævo-rotation might well have been given."

Oleum Lavandulæ.—The words "distilled in Britain" present in the *British Pharmacopœia* of 1885 are now omitted. Commenting on the matter the C. & D. Diary, 1899, 514, makes the following remark: "Considering the purposes for which oil of lavender is used in medicine the dethroning of the English distilled oil does not much matter." Still some surprise has been expressed at the withdrawal of the 1885 limitation. The explanation is that there came official requests that in *Linimentum Camphoræ Compositum*, now *Linimentum Camphoræ Ammoniatum*, "the use of foreign distilled oil should be recognised" (Hong Kong); "omit the oil of lavender" (India). "Introduce for use exotic oil of lavender" (Jamaica). The Surgeon-General with the Government of India considered that "oil of lavender in camphor liniment is a costly and useless addition." "Displace it by oil of verbena." Experts also advised that there was no pharmacological difference between English and foreign oil. The Indian Government Committee of 1894 saw "no objection to the use of the foreign distilled oil in place of oil distilled in England." See also under *Rosæ Gallicæ Petala.*

Oleum Limonis.—PARRY, C. & D. LIII, 54, says, "·860 does not cover all genuine oils; ·861 or ·862 should have been allowed. Only 'not less than 59°' is given for the dextro-rotation; + 59° to + 69° would have been much better. The fractionation test is extremely useful, but 2° is a trifle too rigid for the difference in the rotation of the original oil and the fraction."

Oleum Menthæ Piperitæ.—The official source is stated to be Mentha piperita, *Smith.* DRUCE, B. & C. D. XXXIII, 828, says, 'The authority for the name is Hudson not Smith." For a reply by HOLMES see *Oleum Menthæ Viridis.* PARRY, C. & D. LIII, 54, remarks that "The menthol value might have been introduced with advantage instead of the useless crystallisation test given. The optical activity is for some unknown reason omitted."

Oleum Menthæ Viridis.—The official source is stated to be Mentha viridis, *Linn.* DRUCE, B. & C. D. XXXIII, 828, makes the following criticism: "The spearmint was described in the first edition of the 'Species Plantarum' by Linnæus as *Mentha spicata* var. *viridis*. In the second edition of 1762 he gave it specific rank under the name of *M. viridis*, but between these two dates Hudson, in the 'Flora Anglica' of 1762, had also named it as a species under the name *M. spicata*, and this name appears to be the one which should designate the plant unless the permanence of the trivial name be insisted upon, and hitherto this has not been carried out by British botanists." HOLMES thus replies (through the REPORTER): "It is true that in the first edition of the 'Species Plantarum' on p. 576 (in 1753), Linnæus described the spearmint as *Mentha spicata* var. α viridis, as follows: 'M. spicis solitariis interruptis foliis *lanceolatis* serratis sessilibus,' the type *M. spicata* being described as 'floribus spicatis foliis *oblongis* serratis.' The other plants described are var. β longifolia as 'M. spicis confertis foliis serratis *tomentosis* sessilibus' (= *Mentha sylvestris* of British botanists), and var. γ *rotundifolia* (= *M. rotundifolia* of British botanists). Hudson, in 'Fl. Anglica' 1762, transposes the descriptions of Linnæus by using the exact words of the var. α *viridis* of Linnæus and applying them to *M. spicata*, thus making a second *spicata*. Linnæus in his second edition (1763) of the 'Species Plantarum' retained his own description of the var. *viridis* and made it a species, applying the term Spicatæ to the section, including the mints with a spicate inflorescence, *i.e. M viridis*, *M. sylvestris*, and *M. rotundifolia*. It is obvious, therefore, that the name *viridis* is Linnæus' earlier name and description, and cannot be thus displaced by Hudson's transposition."

Oleum Morrhuæ.—The official requirement is that the oil shall be extracted at a temperature not exceeding 180° F., the solid fat being separated by filtration at about 23° F. The C. & D. Diary 1899, 515, gives the extraction temperature as rarely below 212° F., and the freezing temperature at as near 19° F. as possible. Apparently the temperatures vary, but experts state that the lower extraction and lower freezing temperatures afford the better oil. DOWZARD, P.J. LX, 532, describes satisfactory experiments with AMAGAT and JEAN'S refractometer for the detection of seal oil in medicinal cod-liver oil.

Oleum Olivæ.—The imperialisation of the *British Pharmacopœia*, partly accomplished in the current work and doubtless to be more or less completed not many years hence, has already forced to the front the question of the relative pharmaceutical usefulness of olive oil, sesame oil, arachis oil, and highly purified cotton-seed oil, in pharmacy generally, or, at all events, for half the *Emplastra* and *Linimenta*, two of the three *Sapones*, three or four of the *Unguenta*, &c. In India and some of the Colonies the employment in pharmacy of arachis oil and sesame oil, and to some extent purified cotton-seed oil, for the purposes named, has been found to answer satisfactorily. What is now required is a series of pharmaceutical

researches having for their object the satisfactory preparation of these plasters, liniments, ointments, &c., with purified cotton-seed oil, arachis oil, and sesame oil; special observations being made as to the physical characters of the products, their keeping qualities, whether or not any variations in the proportions of oil are required as compared with the official proportions of olive oil, and whether any, and if any what, objections to the future official recognition of either of the three oils present themselves. Each of the galenical preparations mentioned should be made with each of the four oils, the four products being then compared.

Respecting the detection of cotton-seed oil in olive oil, a writer in the *Montreal Pharm. Journ.* for December 1898 states that KIAMIL MAZHER, a Salonica custom-house official, has reported that none of the tests for cotton-seed oil in other oils can now be relied on except Halphen's. The latter is thus described in the *Journ. Chem. Soc.* LXXIV, Abs. ii, 358. "Equal volumes (about 1–3 c.c of each) of the oil under examination, of amylic alcohol, and of carbon bisulphide containing 1 per cent. of free sulphur, are placed in a tube, and the whole then heated in a boiling solution of sodium chloride for 10–15 minutes. If cotton-seed oil is present, a red or orange coloration is developed; if no coloration is formed, another c.c of the carbon bisulphide solution is added, and the mixture again warmed." But MARPURGO, *Schweiz. Woch. f. Chem. u. Pharm.*, and A.J.P. Oct. 1898, 526, reports favourably on the methods of Fortelli Ruggeri and Cavalli.

Oleum Pimentæ.—PARRY, C. & D. LIII, 54, thought "The rotation and the percentage of eugenol might have been defined." DUNLOP, P.J. LXI, 530, thought that the colour of strata yielded in the official ammonia test might have been stated "the lower being orange-yellow and the upper amber-coloured."

Oleum Pini.—The official source is Pinus Pumilio. This oil is the successor to the Oleum Pini Sylvestris, or Fir-wool Oil of the *British Pharmacopœia* of 1885. In Rouse's "Synonyms," 1898, p. 72, the following inquiry occurs. "Where the compilers of the B.P. [1885] got the 'wool' from is not quite clear." The answer is given by COOKE, P.J. 2, III, 29, from *The Technologist.* MACMILLAN, in B. & C. D. XXXIV, 786, is thus reported. "In Scotland they wondered why oleum pini was exclusively applied to ol. pini pum. Hitherto they had associated the name of oil of pine with ol. pini sylvest. Would it not have been better to have inserted both ol. pini pum. and ol. pini sylvestris with their respective additions?" Consult three papers on the subject by J. C. UMNEY, P.J. LIV, 1041; LV, 161; LV, 542. Fir "wool" was so called because the tough fir leaves were broken up to a soft downy or woolly material which, like wool, could be curled, felted or woven. The Scotch so-called sylvestris oil was really pumilio oil, and has simply had its proper name given to it.

Oleum Rosæ.—PARRY, B. & C. D. XXXIV, 719, and one or two other inquirers, in relation to the official statement "Specific gravity 0·856 to

0·860 at 86° F. (30° C.)" very properly asks whether "86° F. (30° C.)" means (*a*) that both oil and the relative water are at that temperature, or (*b*) that the water-standard being 60° F. (15·5° C.) the oil is, necessarily, taken at the higher temperature, but is referred by calculation to the lower, or (*c*) that the oil at 86° F. (30° C.) is compared with water at 60° F. (15·5° C.). The last-named conditions (*c*) are the official conditions. At page xiii of the preface to the *Pharmacopœia* the vessel in which the specific gravity is taken is directed to be adjusted at 60° F. (15·5° C.), the relative water is therefore at 60° F. (15·5° C.) and the liquid operated on is to be at 60° F. (15·5° C.). When a substance is only liquid at a higher temperature, the latter is stated in the *Pharmacopœia*, as in the cases of *Oleum Rosæ* and *Oleum Anisi*. All uncertainty would, however, be avoided if in future the temperature of the relative water were also stated.

Oil of rose being extremely expensive is extremely liable to adulteration. Hence come suggestions to add to the official factors of specific gravity, congealing point, and melting point, those of acid number, ester number, saponification number, and ratio. See P.J. LX, 504 d; C. & D. LIII, 55; B. & C. D. XXXIV, 61, 253, 553.

The botanical source of oil of rose is officially stated to be Rosa damascena, *Linn.* DRUCE, Y.B.P. 1898, 462, says that the authority "is not *Linnæus* but *Miller*, who first described it under that name in 'Gardener's Dictionary' of 1768." HOLMES (through the REPORTER) replies that Miller certainly should have been given as the authority for Rosa damascena.

Oleum Rosmarini.—PARRY, C. & D. LIII, 55, considers that the official maximum specific gravity 0·915 "is rather rigid."

Oleum Santali.—PARRY, C. & D. LIII, 55, remarks as follows: "The santalol value could well have been added. I originally gave this as 86 per cent., but have since raised it to 90 per cent. UMNEY, SCHIMMEL, and DULIÈRE agree with me in this, and the common adulterants—cedar, West Indian santal, copaiba, and gurjun oils—are thoroughly guarded against by this test." "The following test for sandal oil is proposed by Hendrix:—A solution of 3 parts of crystallised phenol in one part of alcohol is prepared. Half a c.c. of the oil is added to 2 grammes of this mixture, in which it is perfectly soluble. Half a gramme of concentrated hydrochloric acid is then added with shaking. Pure sandalwood oil gives a yellow coloration at the zone of contact, which develops to bright red. Copaiba oil gives a mauve coloration. Cedarwood oil gives a milky solution and a brown coloration."— P. J. LX, 455, from *Annales de Chim. Analyt.* II, 298, after *Journ. de Pharm. d'Anvers.*

Oleum Terebinthinæ.—PARRY, C & D. LIII, 55, remarks as follows: "Here the boiling-point and distillate below 180° are the only quantitative reactions given. One cannot tell what varieties are here meant to be included. Good oil of turpentine usually boils at 155°–156° unless the corrected temperature is given, but 160° is too high. Rosin spirit, a

common adulterant of turpentine, would not be excluded by the B.P. figures, even when present in large quantities. Boiling at about 155°, and at least 80 per cent. distilling below 165° would have been better."

Oleum Theobromatis.—WHITE, P. J. LX, 69, shows that the specific gravity of oil of theobroma increases daily, after melting and cooling, for two or three weeks, even as much as from 0·950 to 0·995, the varieties of oil—Guaiaquil, Grenada, Trinidad, Ceylon, Caraccas—differing in this respect. See also under *Suppositories.* PARRY, C. & D. LII, 892, says, "Melting-point is given as 31·1° to 33·9° C. Would have been better at 30° to 34° C."

Opium.—The official standardisation of opium to 10 per cent. of morphine, introduced in the *British Pharmacopœia* of 1885 and maintained in that of 1898, has given complete medical satisfaction. It has, on the other hand, resulted in some dislocation in the views and practice of importers and merchants specially interested in opium. This is to be regretted; but where the interests of the sick and suffering, safeguarded by the medical practitioners of a country, clash with the interests of wholesale traders there can be no doubt as to which set of interests must give way. The views of the traders were fully published in the years immediately succeeding 1885, while the medical views were reflected by the writer in his *Reports* to the MEDICAL COUNCIL for 1886, pages 11–13, and 1888, pages 11–12. The chief organ of the traders, the *Chemist and Druggist*, in its issue of October 29, 1898, Vol. LIII, 705–7, has, in two more or less temperate articles, succinctly reproduced the case for the traders, but has not touched the position taken up in the writer's *Reports* for 1886 and 1888, which state the case for the public welfare, so far as medical practitioners are responsible for that welfare.

Contrivances for removing the ether in the official assay of opium, by COWLEY, MERSON, and UPSHER SMITH, will be found in the three British journals of pharmacy for December 16 & 17, 23 & 24, 30 & 31, 1898. SIMPSON, P.J. LXI, 280, first drew attention to the figure 0·0285 in the official assay paragraph being given in error for 0·0283.

The following method for the estimation of morphine in opium is far less complicated than the official process. It is by MONTEMARTINI and TRASCIATTI, and is thus described by the B. & C. D. XXXIII, 673, from the *Apotheker Zeitung*. It is suggested that an opium analyst should try it and report on it. "The method consists in powdering 10 grammes of the opium dried at 100° C., and macerating it in the mortar with 100 c.c. of a 20 per cent. solution of ordinary salt for an hour. The whole is then filtered and the residue treated again for an hour with salt solution (60 c.c.). This is again filtered, and the residue washed with salt solution until the filtrate is colourless. The filtrate is then evaporated at 100° to dryness, and extracted with alcohol until the extract gives no reaction with Fröhdè's re-agent. The alcohol is driven off, and the residue treated with 15 c.c. of dilute ammonia, and left for 24 hours. It is then collected on a weighed filter, washed with aqueous solution of morphia until the

washings are colourless, and dried on a water bath. The determination takes four days to complete [!] The following are the comparative results of several samples by some of the well-known methods."

	1.	2.	3.	4.
Helfenberger	10·46	11·52	10·28	4·40
Perger	16·84	15·60	12·29	8·60
Langlois	—	—	10·09	5·89
Squibb	—	15·02	12·40	10·85
The Authors	16·70	15·80	12 00	8·36

Oxymel Scillæ.—The C. & D. Diary, 1899, 515, remarks, "It is curious that the B.P. has never directed this preparation to be filtered." Could it not be filtered, when necessary, without such official direction?

Paraffinum Durum.—PARRY, C. & D. LII, 892, reminds us that it contains, in notable proportions, hydrocarbons other than those of the paraffin series.

Paraffinum Liquidum.—The C. & D. Diary 1899, 516, remarks: "The object of officialising liquid paraffin does not appear, and no dose of it is given." LEECH, *Medical Chronicle*, April and May, 1898, says: "Liquid paraffin is now used as a means of giving inhalations of active drugs." MILLARD, B. & C. D. XXXIII, 523, records other medical uses—see also under *Paraffinum Molle*—namely injections, externally in skin affections, a diluent of fatty remedies, and in the arts; he also gives its synonyms, amongst which are alboline, adepsine oil, oleum deelinæ, &c.; and further states that traders in the oil assure him that the *Pharmacopœia* is wrong in, first, suggesting that the oil is prepared by distillation alone, and secondly, in giving the specific gravity so high as "0·885 to 0 890." The answer to the first criticism is that the *Pharmacopœia* does not make any such suggestion; to the second (see also C. & D. LII, 713) that expert pharmacists at present make no objection to the official specific gravity, indeed one—BIRD, Y.B.P. 1897, 416—distinctly recommended those limits. The best limits of specific gravity for medical purposes have yet to be agreed upon, but it is not unlikely that 0·880 to 0·883 may prove to be more useful limits than those now official. Under the name *albolinum*, the medical authorities of Victoria recommended the official recognition of liquid paraffin.

Paraffinum Molle.—For an interesting account of the origin of this substance, also of "cosmoline" and "vaseline," see REMINGTON, Y.B.P. 1897, 414. For the curiously contradictory conclusions, reached by DUNBAR on the one hand and SHUBEWRATH on the other, concerning the pharmacology of paraffinum molle, paraffinum liquidum, and mineral oils generally, see P.J. LX, 84, from *Münch. Med. Woch.* XLIV, 639. Clearly further pharmacological research is necessary.

Pareira Brava.—Once more has been raised an old botanical question as to the spelling of the generic name of the plant of which the root was,

as HANBURY says, P.J. 3, IV, 103 "the drug on which the reputation of Pareira Brava was originally founded." Should that name be *Chondrodendron*, as in the *British Pharmacopœias* of 1885 and 1898, or *Chondodendron*. The derivation is from χόνδρος, which is supported by MIERS, *Contributions to Botany*, III, 307, and is officially followed, thus *Chondrodendron*. The spelling *Chondodendron* was given, doubtless in error, by the discoverers of the plant, *Ruiz et Pavon*. If the botanical rule *once wrong always wrong* is to hold (see in connexion with *Lansdorfii* under *Copaiba*) *Chondodendron* should be the spelling. DRUCE, P. J. LXI, 203, leans to the latter. So did HANBURY, P.J. 3, IV, 82. On the other hand non-botanical usage (see under *Aurantii Cortex*) and even etymology are sometimes given the preponderance. As to the word *Pareira* it may not be inopportune to state that HANBURY, *op. cit.* p. 82, says that: "In Portuguese the word is written *Parreira*, and signifies a vine that grows against a wall or over an arbour. *Párra* is a vine-leaf."

Parrish's Syrup.—See under *Aitken's and Easton's Syrup.*

Pepsinum.—A great deal of criticism has been uttered concerning the official assay of pepsin. The assay goes no farther than the ascertaining of the solvent power of a given weight of pepsin, mixed with a given weight of hydrogen chloride, on a given weight of albumen, under conditions which are prescribed but which evidently must be more or less conditioned by the skill and judgment of the operator—skill and judgment recognised on pages xiv and xv of the preface to the *Pharmacopœia*. An assay ought to show not merely the power to dissolve, but the power to peptonise, say several critics. No doubt. No good method of assaying pepsin for peptonising power was known at the time the proof sheets of the *Pharmacopœia* were closed against additions. The most promising process in this direction is by ALLEN, P. J. LIX, 561. But that was not published until December 25, 1897, after the proof sheets of the *Pharmacopœia* had been closed to further additions. Moreover, the process has not even yet been so adapted by its author, or so examined and adapted by other and more pharmaceutical workers, as to fit it for a place in a *Pharmacopœia*. Here is an important opportunity for conjoined chemical, physiological, and pharmaceutical work, possibly founded on the work thus well commenced.

Pharmacy, Chemical and Galenical.—See under *Standardisation.*

Phenacetinum.—DOBBIN, P.J. LXI, 666, pleads for "uniformity of practice in regard to the representation of kindred [chemical] substances by means of [chemical] formulæ," and points to the formulæ for acetanilide and phenacetin as illustrations of those "which differ greatly from one another." The REPORTER does not agree that they differ greatly; he even ventures to think that they tell the same tale, with, however, a not undesirable variation in the sequence of symbols. He has, however, already answered the critic, under *Acidum Gallicum*. [MASON, C. & D. LIV, 29,

replies thus to DOBBIN'S criticism. "To look for absolute uniformity of chemical expression in such a work as the B.P., especially in the face of present-day authorities, seems too much. In the case of—

Acetanilide . . . $CH_3 \cdot CO \cdot NH \cdot C_6H_5$ (p. 2),
Phenacetin . . . $C_2H_5O \cdot C_6H_4 \cdot NHCOCH_3$ (p. 242).

the formulæ are evidently following the names given them, and successfully indicate their constitution. Of course, the points [or mid-line dots], as ·NH·CO·, might have been given in both cases, but that is a matter of small consequence." Jan. 7, 1899.] See *Ferri Phosphas.* DOTT, who heard DOBBIN'S criticism (*loc. cit.*), thought the critic hypercritical.

Phenazonum.—In connection with the official footnote, "Phenazone is commonly known as 'antipyrine,'" it may be stated that the patent rights over the article expired in February 1898; but the legal aspect of the question of "antipyrine" or "antipyrin" as a trademark has not been definitively settled. The question is fully considered, however, in C. & D. LII, 394, and the use of the official name *phenazone* is strongly encouraged.

Phenol.—See *Acidum Carbolicum.*

Phosphorus.—The official statement: "A solid, non-metallic element obtained from calcium phosphate," is regarded by DOBBIN, B. & C. D. XXXIV, 809, as "strangely narrow." Evidently he has not read all the paragraphs on page xiii. of the preface to the *Pharmacopœia.* Similar want of knowledge is shown in his remarks on *Plumbi Oxidum*, *Potassii Bichromas*, and *Potassii Chloras.*

Picrotoxinum.—This needs further chemical examination. SCHMIDT regards it as definite; LUDWIG also; but BARTH and KRETSCHY state that it, or, at all events, the commercia substance so-called, is a mixture of (*a*) *picrotoxin* proper, both bitter and poisonous; (*b*) *picrotin*, bitter, but not poisonous; and (*c*) *anamirtin*, neither bitter nor poisonous.

Pilocarpinæ Nitras.—The relation of the alkaloids of jaborandi, namely, pilocarpine, jaborine, and pilocarpidine, to each other, and the full chemistry of the alkaloid of which the nitrate is official, are subjects much needing further investigation, particularly in the applications of the substances to medicine. The official paragraphs on this nitrate necessarily reflect the vagueness of the present state of our knowledge respecting pilocarpine and the other jaborandi alkaloids. If a trustworthy melting-point could be established for a commercially producible yet medically reliable pilocarpine nitrate an important step would be gained. The C. & D. Diary 1899, 516, records a melting-point of 177° to 178° C. for pilocarpine nitrate, and 158° C. for pilocarpidine nitrate. See also P.J. LX, 385, 395, and 449.

Pilula Ferri.—Several notices, but no useful criticisms, of this pill have been published.

Pilula Phosphori.—The official directions include the statement that "when dispensed . . . the resulting pills should be varnished." "What kind of varnish?" asks ALCOCK, P.J. LXI, 344. That is left to the skill and judgment of the dispenser; see pages xiv and xv of the Preface to the *Pharmacopœia.* But if any particular kind of varnish is generally admitted to be best, and uniformity of treatment is shown to be desirable, a few published notes would insure insertion of such details in the next *Pharmacopœia.*

Pix Carbonis Præparata.—P.J. LX, 452, says: "Tar is Pix liquida, and the name should therefore obviously be *Pix carbonis liquida præparata.*" The ED. P.J. has evidently forgotten Jean Paul's recommendation of brevity.

Plumbi Acetas.—Respecting the official method of volumetric estimation, which is on the always somewhat troublesome principle of complete precipitation, HOSEASON (P.J. LXI, 531) says: "By precipitation from neutral oxalate solution of known strength, and subsequent determination of the residual oxalate by permanganate, correct results are obtainable."

Plumbi Oxidum.—See under *Phosphorus.*

Podophylli Resina.—THOMAS (*Pharm. Journ.* LX, 495), noticing that podophyllum resin is now prepared by pouring a tincture of the American rhizome of Podophyllum peltatum *Linn.* into water acidulated by hydrochloric acid, no acid being so prescribed in the 1885 volume, asks why the water is acidulated. Preparers of the resin from the rhizome have realised that the resin separates far more satisfactorily when a tincture is poured into water previously acidulated, and have published this fact (see also C. & D. Diary 1899, p. 517). Hence the re-insertion of hydrochloric acid in the paragraphs relating to *Podophylli Resina* in the *British Pharmacopœia* of 1898.

As regards the occurrence of alkaloid of any kind in podophyllum rhizome, and, therefore, possibly in podophyllum resins, BEACH reported traces in two out of three samples of resin (PRESCOTT, A.J.P., Sept. 1876; also BUSCH, Nov. 1877), while SENIER and LOWE, P.J. 3, VIII, 444, regarded the occurrence of an alkaloid in small quantities in the rhizome and in traces in the separated resin as variable. Since the publication of the researches of PODWISSOTZKY on the constituents of the resin (*op. cit.* and Y.B.P. 1882, p. 158), and the general recognition of his podophylotoxin as the chief active principle, the question of the presence or absence of alkaloids in the drug has become of secondary importance, but considering how much the character of plants and their products is affected by soil and climate, and how desirable it is that the character of medicines should not vary, it would be well if pharmaceutical workers with podophyllum and its resin would occasionally test for alkaloids in these articles as obtained from different sources and in different years, and publish the results from time to time.

The Indian rhizome of Podophyllum emodi, *Wall*, has long been known

to yield a resin comparable with the official resin, but has recently been fully investigated chemically by DUNSTAN and HENRY, and physiologically and therapeutically by MACKENZIE and DIXON (*Journ. Chem. Soc. Trans.* LXXIII, 209, and *Edin. Med. Journ.* Nov. 1898. The podophyllum resins from the rhizome of either plant are shown to be equally valuable as purgatives, and contain identical constituents. The action of the resinous mixtures is proved to be due partly to PODWYSSOTZKY'S and then KURSTEN'S podophyllotoxin, and partly to "podophyllo-resin," so named provisionally. The American rhizome may contain 4 to 6 per cent. of podophyllum resin, the Indian 10 to 12 per cent. "Although there is a difference of nearly 20 per cent. in the amount of podophyllotoxin contained in the podophyllin [podophyllum resin] from these two sources, it is remarkable that they differ comparatively little in physiological activity, a fact which supports the view that podophyllotoxin cannot be regarded as the only active constituent of the resin." DYMOCK, WARDEN, and HOOPER (*Pharmacographia*, I. 70, 1889) found 10 per cent. of podophyllum resin in the Indian rhizome. DYMOCK and HOOPER had previously communicated this result to the P.J. 3, XIX, 585, stating that a second supply of the drug yielded them 12 per cent. The medicinal action they found to be comparable with the resin of the American drug. J. C. UMNEY, P.J. LII. 208, and Y.B.P. 1892, 395, obtained 11·4 per cent. of podophyllum resin from a specimen of the Indian rhizome, and 5·9 from a sample of the American.

Amongst the official characters of podophyllum resin is that it is soluble or nearly so in solution of ammonia. DUNSTAN and HENRY'S results *op. cit.* show that if such a solution were incautiously heated, picropodophyllin would be formed and would remain insoluble, whence a wrong inference might be drawn as to the solubility of the unaltered resin in the ammonia.

Should tests be necessary for distinguishing between American and Indian podophyllum resin, those by MILLARD, P.J. LX, 304 and Y.B.P. 1898, 181, will be found useful.

The REPORTER, in his report for 1891, wrote as follows: "Subject to pharmacological experiment confirming these conclusions [those of DYMOCK and HOOPER *op. cit.* and THOMPSON, *Amer. Journ. Pharm.*, 1890, 295] it would seem desirable, in due time, to recognise *Podophyllum emodi* as an additional official source of the resin of podophyllum."

Potassii Bichromas.—See under *Phosphorus.*

Potassii Chloras.—See under *Phosphorus.*

Potassii Permanganas.—DOBBIN'S useful criticism in the three British journals of Pharmacy for December 24, 1898, suggests the supplementing of the official definition by words showing the production of permanganate from manganate. [His opinion respecting the formula is met by MASON, C. & D. LIV, 29, Jan. 7, 1899.]

Potassii Sulphas.—On p. 266 of B.P. the word "chlorides" on line 4

shows that the same word on line 3 is redundant. The latter was ordered to be omitted in the issue of February, 1899.

Potassii Tartras Acida.—DOWZARD, P.J. LXI, 344, rightly points out that while the official statement is that "The total amount of impurities should not exceed $2\frac{1}{2}$ per cent. of the dried salt" the minimum volumetric figures allow 2·89 per cent. Whereupon DUNCAN, P.J. LXI, 364, rightly explains that here as elsewhere only the nearest practicable reading on a burette is required—as set forth on p. xv. of the preface to the *Pharmacopœia*. SAGE, C. & D. LII, 713, would allow only 1 per cent. of impurity.

Powder, Definition of.—See under *Liquor Calumbæ Concentratus.*

Powders and *Powdered Drugs.*—See *Pulveres.*

Pruni Virginianæ Cortex.—This is officially defined as "The bark of Prunus serotina," EHRH. The P.J. LX, 452, says "The official plant is *Prunus serotina*, and the official title is therefore incorrect." The U.S.P. official title for "the bark of *Prunus serotina* EHRHART" also is Prunus Virginiana. The tincture of the same bark in the Unofficial Formulary of the British Pharmaceutical Conference also is Tinctura Pruni Virginianæ. So if the *Pharmacopœia* sins it sins in good company. Each of the three books, however, shows unmistakeably what is intended, by giving the botanical name of the plant, *Prunus serotina*, Ehrhart. The C. & D. Diary 1899, 517, remarks as follows: "There is a *Prunus virginiana*, Linne, and a *Prunus scrotina*, Ehrh. (B.P.) The former is the choke-cherry, and the latter Virginian prune or wild cherry" or wild black cherry, the Diary writer might have added. The official English name is Virginian Prune Bark, a close translation of the Latin. The C. & D. Diary writer adds "It is regrettable that the B.P. has not, as BASTIN advised, dropped the 'Virginianæ' from the title of *P. scrotina* bark." DRUCE, who has most carefully and usefully criticised the botany of the *Pharmacopœia*, and has noticed this drug also, B. & C. D. XXXIII, 598, does not raise any such question. Still what with the Latin and the English there certainly appears to be much confusion between these Prunes, Virginian plants, and Cherries. How would *Serotinæ Cortex*, Serotina Bark, do for the next *Pharmacopœia*?

Prunum.—See under *Rosæ Gallicæ Petala.*

Pterocarpi Lignum.—DRUCE, B. & C. D. XXXIV, 27, remarks, "Here again no mention is made of raspings." Raspings are not defined officially. Pharmacists must take the responsibilities involved in purchasing drugs in raspings. See also under *Guaiaci Lignum*, *Hæmatoxyli Lignum*, *Quassiæ Lignum* and *Sassafras Radix.*

Pulveres.—The C. & D. LII, 621, says that "It would be serviceable to state, in connection with compounded powders, maximum and minimum

limits of comminution." The C. & D. Diary 1899, 517, suggests "that every vegetable drug exhibited in powder form should have a percentage of ash fixed for it." As just stated respecting the raspings of a drug, so as regards the powder of any given single drug, such things are not at present defined officially, either as regards themselves or their ash. Roots, barks, fruits etc. are officially defined and may be ordered to be reduced to any degree of comminution, and limits of the ash for such drugs can be laid down, but pharmacists must be responsible for the powdering and the produced powders. See also under *Belladonnæ Folia*, *Caryophyllum*, *Digitalis Folia*, and *Senna*. The ash-yields, maximum or minimum or average, of many plants are given by the REPORTER. Many more should be ascertained and published. Different observers should not hesitate to publish separate accounts, or the same observer in different years. Trustworthy data would thus sooner or later be at disposal. See *Chips*, *Raspings*, *Shavings*.

Pulvis Cretæ Aromaticus.—THOMAS, P.J. LX, 495, asked "why saffron should be omitted from *pulvis cretæ aromaticus*." LEECH, *Medical Chronicle* for April and May, 1898, supplies the answer. "Saffron seems a useless substance. It is not known to have any medicinal effect, and it is, moreover, an expensive drug."

Pulvis Rhei Compositus.—PAUL and COWNLEY, P.J. LXI, 389, also DUNCAN, P.J. LXI, 539, have shown that the magnesia, light or heavy, in this powder, may absorb carbonic acid gas from the air, especially in moist conditions of the atmosphere. The vendor will therefore run some risk, if not careful, of being summoned under the Sale of Food and Drugs Acts for supplying a drug "which is not of the nature, substance, and quality of the article demanded." The powder should always be kept in a thoroughly well-closed bottle. See *Magnesia*.

Purity and impurity, Limits of.—See under *Balsama Peruvianum et Tolutanum*, *Calcii Hypophosphis*, *Quininæ Sulphas*, *Resina*, *Saccharum Purificatum*, *Sale of Food and Drugs Acts*, *Sodii Bicarbonas*, *Sodii Citro-Tartras Effervescens*.

Quassiæ Lignum.—The P.J. LX, 452, remarks "Chips, shavings or raspings are not mentioned." The pharmacist must take the responsibility of using such convenient forms of the imported logs, though the *Pharmacopœia*, undesignedly, aids him in their recognition by its "Characters." See also under *Guaiaci Lignum*, *Hæmatoxyli Lignum*, *Pterocarpi Lignum* and *Sassafras Radix*.

Quillaiæ Cortex.—The official source is "Quillaja saponaria." DRUCE, B. & C. D. XXXIII, 598, says: "Strictly speaking, the specific name should be written *Saponaria* (capital S)." HOLMES replies thus (through the REPORTER). "The conclusion is incorrect. The word is an adjective specific name, formed, apparently, since classical times, by adding the adjective termination *arius* to *Sapo*. It has nothing to do with the

genus Saponaria, and is not a modified vernacular name, and therefore should be spelt with a small s. The critic has probably taken the Index Kewensis as his authority without verifying the reference. In Molina's work an initial capital is used for *every specific name*, thus, Medicago sativa is written Medicago Sativa, and the compiler of Index Kewensis, according to the rule he adopted, copied the word exactly from Molina."

Quininæ Hydrochloridum Acidum.—The C. & D. LII, 615, has the following statement: "Hesse has shown that the formula for the acid hydrochloride is correctly expressed as without water of crystallisation, but the B.P. gives it as $C_{20}H_{24}N_2O_2,2HCl,3H_2O$." HOWARD replies as follows, *op. cit.* 675. The salt is anhydrous if "dried at 100° C., but for the crystalline salt formed at a lower temperature the hydration in the new *Pharmacopœia* is correct. When crystallised with three atoms of water the salt forms a dry crystalline powder, which, dried at 100° C., becomes opaque and loses its brilliancy." Liebig first formed this salt (anhydrous) by the union of dry hydrochloric acid gas and quinine. CLERMONT, *Journ. Chem. Soc.* LII, 980, showed that a solution of the salt evaporated below 100° C. yielded the anhydrous substance. HESSE, *Journ. Chem. Soc.* LXII, 314, confirmed CLERMONT. Full care was taken, before the *Pharmacopœia* was published, to ascertain that the commercial salt prepared in this country had the composition officially assigned to it. Two-thirds of the water are readily given up, the remainder with more difficulty. In fact, only in a well-closed bottle can the anhydrous salt be prevented from reabsorbing moisture from the air, and to the extent of one molecular proportion quite readily. MERCK, C. & D. LIII, 349, says, "It is practically impossible to titrate this preparation with normal alkali. If litmus be taken as an indicator the result falls short of the true value, but if phenolphthalein or methyl orange be used the result becomes excessively high." Clearly there is room for some further chemico-pharmaceutical investigation of this official substance.

Quininæ Sulphas.—Two chemical experts in the examination of quinine salts, the one a professional analyst, the other a technologist, probably of equal skill as regards the testing of these compounds, have published communications respecting the official requirements of purity in quinine sulphate, that is to say the limit of the proportion of pharmacologically allied cinchonidine sulphate permitted to be present. See COWNLEY, P.J. LX, 412, 472, and D. HOWARD, P.J. LX, 447. The result shows that the standard of purity for quinine sulphate, prescribed in the *Pharmacopœia*, is one which can practically be attained by manufacturers without difficulty or incommensurate cost, and can be maintained without undue trouble by all concerned in the distribution of this substance for remedial purposes. At present, apparently, one cannot see that any useful end would have been gained by more severe official requirements.

Raspings, Shavings, Chips.—See under *Cinchonæ Rubræ Cortex*, *Guaiaci Lignum*, *Hæmatoxyli Lignum*, *Pterocarpi Lignum*, *Pulveres*, *Quassiæ Lignum* and *Sassafras Radix*.

Research, pure and applied.—How far should it be limited in the case of drugs? See under *Balsama Peruvianum et Tolutanum*, *Magnesia*, *&c.*

Resina.—DIETERICH, C. & D. LIII, 130, pleads for the distinctive name *resina terebinthinæ* for this substance, or, still better, the name *colophonium*. The fact that practically every follower of medicine, including pharmacy, in the British Empire is familiar with this article under the single name *resin* or *rosin*, whereas all other resins in pharmacy have a distinctive name, for example *resinæ guaiaci*, *jalapæ*, *podophylli*, *scammonii*, would seem to render such a change unnecessary. He also pleads for the official recognition of a method of determining the acid-number of resin, and he offers a process. Is it necessary, in view of the official uses of resin? Lastly, as regards the official statement that when resin is burnt it leaves "no appreciable ash," he says it is impossible to obtain such resin. Will two or three workers please determine the yield of ash from several different samples of resin and publish the results, so that a fair standard can gradually be agreed upon for insertion in the next *British Pharmacopœia*?

Rhei Radix.—The writer of a short notice in the C. & D. Diary 1899, 518, seems to have indulged in great expectations as to official standards under which certain commercial kinds of rhubarb were to be excluded or included which now are included or excluded. When our knowledge of the pharmacology of rhubarb root enables us to raise useful pharmacological standards for rhubarb they doubtless will be raised, and in the wake of the demand thus created commerce may be trusted to follow. See *Emodin* under *Aloinum*. For variations in the proportion of ash see DOTT, C. & D. LII, 463, and DIETERICH, B. & C. D. XXXIV, 457. For the detection of turmeric in rhubarb, see JAWOROWSKY, P.J. LX, 126.

Rhœados Petala.—To the other characters of the petals, DRUCE, B. & C. D. XXXIV, 27, thinks that "the words almost black at the base might have been added." HOLMES (through the REPORTER) replies that the dark colour mentioned is neither sufficiently constant nor sufficiently characteristic of Papaver Rhœas to warrant the suggested addition.

Rosæ Gallicæ Petala.—DRUCE, B. & C. D. XXXIV, 27, noticing the official requirement "from cultivated plants," remarks: "But the geographical source is not given." In the 1885 *Pharmacopœia* the source "Britain" appeared. Any special geographical source is intentionally omitted. Already the *Pharmacopœia* is largely imperial. India and our Colonies must not be directed to get their red-rose petals from Britain alone. So with several *Olea*, *Lupulus*, *Oleum Lavandulæ*, *Prunum*, *Sambuci Flores*, *Scoparii Cacumina*, and other drugs.

Saccharum Purificatum.—The C. & D. Diary 1899, 518, remarks that: "A test for 'blue-facing' would have been an advantage—*e.g.* a mixture of the syrup with its own volume of dilute sulphuric acid should not give a sulphuretted odour after standing in a closed bottle over-night."

Saffron.—See under *Crocus*, *Decoctum Aloes Compositum*, *Pulvis Cretæ Aromaticus*, and *Tinctura Rhei Composita.*

Sale of Food and Drugs Acts.—See under *Acidum Aceticum Glaciale*, *Benzoinum*, *Gelatinum*, *Magnesia*, *Myrrha*, *Pulvis Rhei Compositus*, *Tincturæ*. Similar remarks might be made respecting *Acaciæ Gummi*, *Acetum*, and *Adeps.*

Sambuci Flores.—DRUCE, B. & C. D. XXXIV, 27, remarks that no geographical source is given.—See under *Rosæ Gallicæ Petala.*

Santoninum.—JAWOROWSKY, P.J. LX, 194, identifies santonin by a colour reaction which requires a cerium salt, phosphorus chloride and much detail. Further investigation, and, if possible, simplification, of this reaction would appear to be required, for good tests are needed.

Sapones Animalis, *Durus*, *Mollis.*—See under *Oleum Olivæ.* PARRY, C. & D. LII, 892, points out that the "limit of alkaline carbonate" would include limit of alkaline silicate and borate.

Sarsæ Radix.—DRUCE, B. & C.D. XXXIV, 27, writes as follows:—"*Smilax ornata* was published by Lemaire in Illust. Hortic. xii (1865) t. 439 from Mexico, and Lemaire rather than Hooker should be cited as the author. It is true that Hooker says his plant differs in some respects from Lemaire's, but if it is specifically distinct a new name will have to be given to the official species." HOLMES replies (through the REPORTER): "*Smilax ornata* was published by Lemaire and has a note of interrogation after its name in Lemaire's description, which is usually intended to indicate that the plant may not be a new species though unidentifiable. According to Hooker f., Bot Mag. 7054, the *S. officinalis* of Hanbury & Flückiger, and Bentley & Trimen, is not the *S. officinalis* of Kunth, but Hanbury believed his plant, which is the *S. officinalis* of Humboldt, to be identical with a plant sent to Rev. G. B. S. Williams under the name of *Smilax macrophylla variegata.* This plant Sir J. Hooker believes to be identical with the *S. ornata* of Lemaire, but did not observe in the new plant the large deltoid amplexicaul stipules found in Lemaire's plant, nor is the leaf cuneate in the young state. But there appears to be no reasonable doubt that the plant figured by Hook. f. under the name of *S. ornata* is the Sarsaparilla plant of Costa Rica, and as it is not the province of the *British Pharmacopœia* to give botanical names to plants, and as the male plant alone is known, it is not desirable, until the female plant is known, to attempt to go beyond the most recent name given to the plant by a botanist preeminent in the science."

Sassafras Radix.—DRUCE, B. & C. D. XXXIV, 27, remarks: "Chips or shavings are no longer mentioned."—See also under *Guaiaci Lignum*, *Hæmatoxyli Lignum*, *Pterocarpi Lignum*, and *Quassiæ Lignum.*

Scammonium.—STOEDER, B. & C. D. XXXIV, 516, makes the following useful criticism: "It is remarkable to find next to *Scammoniæ Resina*, for

which a method of preparation and tests as to its purity are given, the drug *scammonium* described, by which is intended the commercial variety of the resin, which is known to be much adulterated." The adulterations can be dealt with. But the concurrent official recognition of pure resin of scammony and of that natural mixture of the pure resin with gum and other things, termed, by a misleading word, *virgin* scammony, is only necessary because considerable proportions of the users of scammony in this country still demand the natural and older but altogether inferior article. That demand is, however, rapidly diminishing.

Scilla.—DRUCE, B. & C. D. XXXIV, 27, seems to suggest that amongst the official "Characters" should be included a notice of "the large quantity of crystals of calcium oxalate which the bulbs contain."

Scoparii Cacumina.—See under *Rosæ Gallicæ Petala.*

Scopola Root.—See under *Emplastrum Belladonnæ.*

Seal Oil, Detection of.—See under *Oleum Morrhuæ.*

Self-medication by amateurs.—See under *Syrupus Papaveris.*

Senegæ Radix.—The C. & D. Diary 1899, 518, says that the official description, if rigidly interpreted, would include only what is commercially known as Southern (Virginian) root and exclude Northern (Manitoba) root collected in Wisconsin, Minnesota (U.S.A.), and Manitoba (Canada); adding that it is a larger root than the Southern, and is much used.

Senna. Sennæ Alexandrina et Indica.—The British Pharmaceutical Conference places before its members the following subject for research. "Do preparations of the leaves of the two varieties of senna differ? If so, to what extent?" This question needs even more consideration from its physiological and therapeutical sides than from its chemical and pharmaceutical sides. DILLY, B. & C. D. XXIV, 301, found that, as regards cathartic acid, the Alexandrian variety yielded one-fifth to one-third more than that of Tinnevelly. As to external characters, SAYRE, P.J. LIX, 5, distinguishes the two kinds, even in powder, by the number of leaf hairs present, the most being on Alexandrian, and by the difference in the diameter of the stomata. DENNISTON, P.J. LX, 323, also finds more hairs on both the upper and lower surfaces of Alexandrian than on Indian leaves, moreover the Alexandrian hairs are somewhat straighter than the Indian. The shape of the stomata he did not find to be distinctive.

As with *Belladonnæ Folia, q.v.*, and *Digitalis Folia, q.v.*, so, says DIETERICH, B. & C. D. XXXIV, 457, from *Chem. Zeitung*, with *Senna Leaves*, the ash will vary in proportion according as the sample of powder incinerated be taken from one or other of a series of sieves—showing the importance of the whole of the powder of a batch of leaves being passed through even the smallest mesh sieve, and then the siftings being thoroughly mixed. The Alexandrian powder from the sieve having eight meshes per centi-

metre yielded 17·5 per cent. of ash, but from the 65-mesh sieve 24·6 per cent. Moreover, the 8-mesh ash contained 10·7 per cent. of anhydrous potassium carbonate, while the 65-mesh ash only 3·1 per cent. of the potassium carbonate. So with the Tinnevelly powder. The 8-mesh yielded 11 per cent. of ash, the 65-mesh 13·2 per cent.; the 8-mesh ash containing 20·8 per cent. of potassium carbonate, the 65-mesh ash only 12·7 per cent. of potassium carbonate. These are extremely interesting results, and allow of mechanical and chemical explanation, especially if the aid of the imagination be called in, and especially if resulting assumptions be submitted to the ordeal of actual experiment. The parts of a leaf or other structure are unequally brittle, perform different functions, have different inorganic and organic cell-contents. Ground in mills, and the product passed through a series of sieves of increasing degress of fineness, the more and less brittle parts become more or less separated, and the active magnesium cathartate becomes unequally distributed, because the more and the less earthy constituents become more or less separated. An intelligent drug-grinder will, of course, as already intimated, grind and grind until the whole of the parcel has passed the finest of the sieves, and will then thoroughly mix the whole of the product. But would not a careful mechanical separation, if practicable by hand, of the different parts of leaves (leaves of any plants, especially large leaves) and separate incineration of the separated portions, with partial but comparable analyses of the resulting separate ashes, be likely to afford useful contributions to our knowledge of vegetable physiology? Pharmacists having commensurate skill and leisure might thus investigate the leaves of belladonna, foxglove, henbane, &c., and thus, perhaps, contribute to the pharmacology and pharmacy of such materials as well as to vegetable physiology generally.

Sesame Oil.—See under *Oleum Olivæ.*

Shavings, Raspings, Chips.—See under *Cinchonæ Rubræ Cortex, Guaiaci Lignum, Hæmatoxyli Lignum, Pterocarpi Lignum, Pulveres, Quassiæ Lignum,* and *Sassafras Radix.*

Sinapis Nigræ Semina.—DRUCE, P.J. LXI, 202, thus criticises the official botanical reference to black mustard in the *British Pharmacopœia*, page 290, lines 3 and 25:—"The name of the black mustard is given as *Brassica nigra*, Koch, which was founded in Roehl's 'Deutsch. Flora,' ed. 3, vol. iv. p. 713, of 1833, but Roth, in his 'Manuale' of 1830, vol. ii. p. 957, had previously called it *Brassica sinapioides*, and until British botanists accept the permanence of the specific names as a rule of nomenclature, the latter name should be adopted." HOLMES (through the REPORTER) says: "DRUCE is right. Brassica sinapioides, *Roth*, must be the name so long as the genus Sinapis of Linnæus is merged in Brassica. The name is given in the *Appendix* to the Index Kewensis, vol. iv. p. 1271, which probably accounts for its being overlooked.

For standards concerning starch in black and white mustard seed, *vide* LLOYD, P.J. LXI, 369, from A.J.P. LXX, 433.

Sodii Arsenas.—This is officially estimated by the rarely quite satisfactory process of total precipitation, lead acetate in the presence of acetic acid being the precipitant. Variation in details might readily result in variation of composition of the precipitate, which should be $PbHAsO_4$. HOSEASON, B. & C. D. XXXIV, 651, suggests estimation as magnesium pyroarsenate, a method which probably would answer better; but it should be worked out experimentally, with all due checks, and the results should be published, with short but complete details.

Sodii Bicarbonas.—Freedom from carbonate is sufficiently provided for, officially, by volumetric analysis. A qualitative mercuric chloride reaction is only given to afford, as regards bicarbonate, a "distinction from sodium carbonate," which gives with the mercuric chloride a brownish-red precipitate at once, and not the mere whitish precipitate or whitish cloudiness which is officially permissible, at first, with the bicarbonate. HOWARD, C. & D. LII, 675, probably had not read the four words just quoted when he penned the following criticism: "Sodii bicarb., if pure, will not pass the test given." The test is clearly not given as a "pass" test of purity, but only as a "distinction" test between bicarbonate and carbonate. The critic, in stating what is well known, namely, that "if the salt be pure, it does not give even a white precipitate," missed an opportunity of recommending the following useful words in italics as an addition to the official sentence. "A solution of the salt in cold water gives *either no precipitate immediately or only* a whitish precipitate becoming brownish-red on standing," &c. In the German Pharmacopœia a tolerably severe "pass" test for carbonate in bicarbonate is given. Not content therewith, KUBLI, P.J. LXI. 481, suggests what he believes to be a still more severe test. SKUBICH, *Apoth. Zeit.* 1898, 644, is not content with KUBLI'S test. Where is the practical wisdom of this striving for the unattainable? The medical and pharmaceutical compilers of the *British Pharmacopœia* know that even if sodium bicarbonate is free from monocarbonate when it goes into the dispensing bottle, it cannot for long come out quite free, and probably is never free when it passes to the patient unless preserved, for quite other reasons, in a bottle charged with carbonic acid gas. Hence it is not officially required to be free, though its *practical* purity is amply provided for. SHAW, C. & D. LII, 714, suggests that the mercuric chloride test is unnecessary. He is quite right. The useful additional words recommended by the REPORTER may find a better place under the tests for "Carbonates and Bicarbonates" in Appendix III. p. 420, when the time comes for revision.

Sodii Citro-Tartras Effervescens.—This and other official "effervescent" preparations are liable to spoil through loss of carbonic acid gas, especially if kept in a damp place. DYER, Y.B.P. 1898, 464, suggests that they should officially be required to have 50 per cent. of their bicarbonate available for producing effervescence. Why? So long as competition and purchasers' knowledge of their own requirements suffice for the enforcement of duties by pharmacists towards the medical profession and the public, surely there is no need to seek the aid of legislation, whether pharmacopœial or parliamentary.

Sodii Hypophosphis.—For JOWETT'S improvements in the methods of assaying hypophosphites see *Calcii Hypophosphis.* In his paper, Y.B.P. 1898, 409, will also be found references to the work of P. DE ST. GILLES, LUNAN, MOERK, AMAT, ROE, and TYRER, leading up to his own elaborate researches. His improved lead-acetate test will doubtless supersede the official permanganate test, even when the latter is employed in conjunction with the present official lead acetate test.

Sodii Iodidum.—The improved official definition must be credited to the late E. C. C. STANFORD.

Solubilities.—ALCOCK, P.J. LX, 494, and C. & D. LII, 838, said, in reference to "parts in the new B.P.", as affecting solubilities, "no reference was made as to whether fluid parts or parts by weight were meant, and in some instances it would make an important difference in the figures quoted if parts by weight were intended." MANN followed with the opinion that "on the question of parts, he thought an authoritative statement should be made by the compilers of the B.P."

On page xiv. of the preface to the *Pharmacopœia* occurs the only authoritative statement respecting the solubilities mentioned in the book. Thus: "In stating the solubility of chemical substances in water or other neutral liquid, attention has been paid to the general requirements of medical practitioners, and to the usual temperatures that prevail where medicines are stored and used. 'Ordinary temperatures' are those between 50° and 70° F. (10° and 21·1° C.). In stating the relation of chemical substances to acid, alkaline, or saline liquids, the term 'solubility' is necessarily sometimes used in a general sense, irrespective of more or less obvious concomitant chemical changes." This statement does not directly touch the question as to the meaning of the word "part" or "parts" in connexion with official figures which are intended to show the solubility of given substances in given liquids. That question was raised during compilation, but was soon found to be one of such magnitude as quite precluded its satisfactory solution in any period short of that intervening between the publication of the fourth and fifth *British Pharmacopœias.* Moreover, it was soon found that what was of far greater importance from the point of view of those for whom official solubilities are especially given, namely, medical practitioners, was solubility at "the usual temperatures that prevail where medicines are stored and used." This question has already been touched in this report under *Acidum Boricum*, which see, but that all concerned would welcome figures indicating solubilities at the "ordinary temperatures" named in the preface to the *Pharmacopœia*, that is 50° to 70° F. (10° to 21° C.), may be gathered from the following remarks by a correspondent in P.J. LXI, 544. "I sincerely hope that all the solubilities of the new *Pharmacopœia* are as soundly practical as that given for boric acid. . . . There is no reason which I can divine why such memoranda should not include at the same time the extreme and the practical limit of solubility of such substances, which in the case of that under review would read 1 in 25–30." These

remarks entirely support the action referred to in the prefatory statement already quoted.

Where the word *part* or the word *parts* occurs, either actually or implied, twice in one and the same sentence of a book, the word should not, strictly, have two meanings; it should only mean parts by weight in parts by weight, or parts by volume in parts by volume. Yet in books of both scientific and applied chemistry, not excepting pharmacopœias, the word *part* or the word *parts* occurring twice in a sentence quite commonly does possess two different significations, at all events in the case of a soluble solid, namely, part or parts by weight in part or parts by volume; in other words, to give a concrete illustration, grammes of the solid in cubic centimetres of the solvent. What is actually meant in any given case can, as a rule, only be ascertained by reference to the original memoir describing the research whence came the figures. Even in such papers the point is not always clearly stated, and, it may here be added, the temperature prevailing during the experiments, the degree of purity of the dissolving body and the solvent, and other important conditions, are not always satisfactorily set forth. The two Dictionaries of Solubilities, "Storer" and "Comey," throw little light on the question of "parts;" vide Mercuric Chloride in "Comey," for example. On the other hand a table of solubilities of fifty medicinal substances, by MORRISON, Y.B.P. 1882, 238, is prefaced by the very clear statement that it "gives the number of cubic centimetres of diluted alcohol of 0·941 sp. gr. required to dissolve 1 gramme of the salts named at a temperature of 60° F." MYLIUS and FUNK, Y.B.P. 1898, 120, give a very elaborate but quite clear table of the solubilities of twenty-one "readily soluble salts which had not hitherto been studied." BODLÄNDER, in a theoretical paper in *Zeit. Physikal. Chem.* VII, 308-322, contemplates grammes of substance in 100 cubic centimetres of water. DOTT, in a paper read before the Edinburgh University Chemical Society, February 11, 1880, condensed in *Chem. News* XLI, 165, discusses the nature of solution, the differences in the solubilities of many alkaloidal salts in the amorphous and anhydrous state as compared with their solubilities in the crystalline and hydrous form, the two chief methods by which solubilities are ascertained, the influence of time on the method by digestion and the method by cooling, and the question of supersaturation. The following three papers are examples of statements respecting solubilities in which the "parts" are not clearly defined. PETTENKOFER, Solubility of Alkaloids in Chloroform, *Rép. de Pharm.* XV, 271; SCHLIMPERT, Solubility of 18 Alkaloids and their Salts in Chloroform, *Archiv der Pharm.* CL, 151; Solubility of Alkaloids in Olive Oil, *Journ. de Pharm.* XXXV (3), 436. In such cases "parts" must be assumed to be parts by weight in parts by weight

The solubility, in ordinary pharmaceutical menstrua, of nearly every soluble substance mentioned in the *Pharmacopœia* needs renewed research from the point of view of prescriber and dispenser. Solubility at standard temperature, 60° F. (15·5° C.), should be ascertained; solubility at the easily remembered equivalent F. and C. temperatures of 50° (F.) or 10° (C.) should be ascertained; and perhaps at 70° F. (21·1° C.). Thus pro-

secuted, the subject affords opportunities for hundreds of researches and the publication of hundreds of pharmaceutical papers between the present time and the issue of the fifth *British Pharmacopœia*. The determination of solubility is sometimes easy, sometimes difficult, hence is worthy of attention by pharmacists who while possessing commensurate ability have had widely varying amounts of manipulative experience. See *Acidum Benzoicum*, *Acidum Boricum*, *Hyoscinæ Hydrobromidum*, *Oleum Juniperi*.

So far as the REPORTER is aware, or, as Editor of the *Pharmacopœia*, has had any control of, or any influence respecting, experiments relating to solubilities, "parts" in the *Pharmacopœia* relate to parts by weight of solid substance in parts by volume of solvent, or parts by volume of liquid substance in parts by volume of solvent; that is to say, grammes in cubic centimetres for solids, and cubic centimetres in cubic centimetres for liquids.

Spiritus Ætheris Compositus.—There is still some medical demand for this old compound, "Hoffman's Anodyne," hence its continued presence in the *Pharmacopœia*. A great deal of trouble has been taken to render its production somewhat less wasteful and uncertain than before (1885), but the article itself is still as indefinite as ever, and our ignorance of its chemical or pharmacological characters is as great as ever. Many comments respecting it have been published during the year (1898), but no real criticisms and no useful suggestions. The one thing first wanted respecting this spirit is a pharmacological research that shall demonstrate its usefulness or its uselessness, as a medicine. If it be useless, its omission from the *Pharmacopœia* will follow in due time. If it be useful, chemical, pharmacological, and pharmaceutical research conjoined may be trusted for the production of its active constituent or constituents and its or their exhibition in a convenient form.

Spiritus Ætheris Nitrosi.—Neither the improvements in the mode of preparing, nor those in the methods of testing, this spirit have been criticised. BARCLAY, B. & C. D. XXXIV, 657, thought that the introduction of Liquor Ethyl Nitritis to the *Pharmacopœia* of 1898 should have been accompanied by the omission of Spiritus Ætheris Nitrosi. The reasons for its retention, at present, have been given under *Liquor Ethyl Nitritis*. Many objections, however, to the official recognition of the synonym "Sweet Spirit of Nitre" have been recorded, for that action has had the effect of practically stopping the sale of a certain old-fashioned weakly nitrous and often non-nitrous "sweet spirit of nitre" for which there was a considerable demand. Up to 1888, indeed, though suspicions of the old spirit being of value as a drug were very generally entertained, there was no real evidence that it was valueless. But at the end of that year, LEECH, P.J. 3, XIX, 490, and BRUNTON, P.J. 3, XIX, 491, brought forward evidence that rendered untenable any serious contention for its medicinal usefulness. Thenceforward that the old liquid was a mere stimulant was gradually recognised, and had not the medical compilers of the *Pharmacopœia*, and their pharmaceutical helpers, in due time provided a truly

medicinal "sweet spirit of nitre," something like a scandal would have been created. Hence the synonym in question.

For new modes of quantitatively estimating ethyl nitrite, see *Liquor Ethyl Nitritis.*

Spiritus Ammoniæ Aromaticus.—BURD, C. & D. LII, 714, and a correspondent of the P.J. LX, 448, question the correctness of the official specific gravity, 0·888 to 0·893. The data of their calculations are not sound. It is quite easy, working on any scale, to obtain a product of 0 893, and not difficult one of 0·891 ; and 0·889 can be obtained with great care.

HOSEASON, P.J. LXI, 530, C. & D. LIII, 834, and B. & C. D. XXXIV, 651, suggests the following as an improved mode of making the official ammonia tests: (1) determine the total ammonia; (2) add excess of barium chloride, filter into excess of decinormal hydrochloric acid, wash the precipitate with three quantities of distilled water, add the washings to the acid, finally titrate with decinormal soda solution.

Makers of the spirit on the large scale state that the official character "liable to darken slightly" need not have been given.

Spiritus Chloroformi.—MACMILLAN, B. & C.D. XXXIV, 786, objects to the following two official synonyms, but gives no details as to any difference between "chloric ether," "spirit of chloric ether," and spirit of chloroform, and gives no evidence whatever that medical practitioners regard the three names as otherwise than synonymous.

Spiritus Rectificatus.—Respecting the official "Alcohol (90 per cent.)" and its four dilutions, 70, 60, 45, and 20 per cent., a critic, B. & C. D. XXXIII, 518, wrote as follows: "Nothing in the B.P. 1898 is more irritating than the alteration of the old S.V.R. and abolition of proof spirit. The excuse [imagined by the critic] that the diluted alcohols have been taken from the French Codex does not hold good, because the French have not a proof spirit which is the basis of fiscal arrangements. Can anyone seriously urge that the new rectified spirit (S.G. ·834 and 58·2 over-proof) has any advantages over the old spirit (S.G. ·838 and 56 over-proof)? Or that 60 per cent. alcohol was necessary when it only differs by 5 degrees from the old proof? The remaining strengths, if really necessary for proper extraction of drugs, could easily have been based upon the old standards." Basing on old standards was tried (see *Tincturæ*). It did not answer. But a sufficient reply to this lament will be found in the following remarks by a practical manufacturing pharmacist, BIRD, P.J. LXI. 164. "The change in the strengths of the official alcohols is the most important and far-reaching of any that have affected the characters of the galenical preparations of the new Pharmacopœia. I must confess to not sharing the regret with which the disappearance of proof spirit has been viewed in some quarters. As long as the word 'proof' remained on the official page there was always an inducement to use it as a standard of alcoholic strength ; but its removal has cleared the way for the more rational, scientific, and

infinitely more convenient centesimal system now happily adopted Long custom and daily contact with the proof standard have rendered it indispensable to the British Excise, but for pharmaceutical purposes the new method of expressing alcoholic strength has all those advantages over the old which metric weights possess when compared with avoirdupois weights. Forty or fifty over-proof is meaningless to the average mind as an expression of alcoholic strength, while the terms 40 or 50 per cent. alcohol at once call up a tangible idea of relative alcoholic value. The ease with which volume-percentage has displaced proof degrees in the routine of the laboratory is surprising, and the compilers of the Pharmacopœia are to be congratulated on having so boldly departed from the beaten track by authorising a system both convenient to work with and widely acceptable." BIRD thus fairly voices the opinions and describes the experience of most pharmacists who have written on the subject. Admirable tables have been published, showing at a glance how various strengths of rectified spirit labelled in terms of the old phraseology, "over-proof" or "o.p.," may be diluted to the 70, 60, 45, 20, or other percentage strengths required in the *Pharmacopœia*; also time-saving tables showing the alcoholic strengths of mixtures of spirit and water at other than standard temperatures. See tables by BIRD, P.J. LX, 396, 426, 500; J. C. UMNEY, P.J. LX, 398; MARTINDALE, P.J. LX, 417; also alcohol-conversion rules by LUCAS, P.J. LX, 543; and short directions by BROWN, C. & D. LII, 714. REMINGTON, an eminent professor of pharmacy and first vice-chairman of the committee of revision and publication of the Pharmacopœia of the United States of America, says, *American Druggist and Pharmaceutical Record*, IX, 251, respecting the new *British Pharmacopœia*, "A very important change is the introduction of five strengths of alcohol . . . . with the corresponding specific gravities. This is a move in the direction of greater accuracy, and more than compensates for the loss of the time-honoured, but much-abused, proof spirit."

The official "alcohol (90 per cent.)" is defined as "A liquid containing 90 parts by volume of ethyl hydroxide, C_2H_5OH, and 10 parts by volume of water." JENKS, B. & C. D. XXXIV, 108, in a thoughtful and otherwise excellent critique on the chemistry of the *Pharmacopœia*, says of this definition "no allowance is made for the contraction which takes place when alcohol and water are mixed." He is entirely in error. The definition expresses a simple fact. An editorial note in P.J. LX, 376, also adversely states that "if ninety volumes of ethyl hydroxide were mixed with ten of water, the product would measure less than one hundred volumes. Similarly, if the ethyl hydroxide in one hundred volumes of alcohol (90 per cent.) were entirely removed, and measured exactly ninety volumes, the residual water must measure more than ten volumes." Obvious truths, these; the official definition neither affirms nor denies them; it simply expresses another truth altogether. The latter critic then states what he would have done. He says he would have left out all reference to the water!!

The increased strength of the *Spiritus Rectificatus* of 1898 over that of 1885 has been regarded by some critics as tantamount to an increased cost

of spirituous preparations to the pharmacist, who, they say, will be unable to recoup himself. Thus, C. & D. LII, 621, "It will be remembered tha alcohol (90 per cent.) is 58° over proof, and costs more than the old 56 o.p. spirit." Loss to the pharmacist does not follow. Many spirituous preparations are weaker under the 1898 than under the 1885 *Pharmacopœia.* Just before the current work was published, an expert, having the amplest opportunities for making a trustworthy estimate, calculated out the total cost to the pharmacist of the spirituous preparations of these two *British Pharmacopœias* and came to the conclusion that the preparations of the *Pharmacopœia* of 1898 would cost less if anything than those of the *Pharmacopœia* of 1885, taken all round.

The difference in the strength of the *Spiritus Rectificatus* of 1898 as compared with that of 1885 is thus officially set forth. "Alcohol (90 per cent.) is only slightly stronger than the Rectified Spirit of the *British Pharmacopœia* 1885, containing by volume 1·35 per cent., or by weight 1·65 per cent., more ethyl hydroxide." These figures follow from the 1898 physical data. FLETCHER, P.J. LXI, 436, shows that from the 1885 data would follow other figures, namely, by volume 1·24 per cent, or by weight 1 57 per cent., and he propounds the question, "Which is correct?" KIRKBY, LXI, 479, shows that at least the 1898 figures are correct. LEWIS, P.J. LXI, 605, gives a triple table showing the strengths of the official mixtures of ethyl hydroxide and water, calculated from the different data furnished by three different expositors, STEVENSON, ALLEN, HEHNER. In a footnote to this last communication "ED. P.J." shows that the discrepancies in the triple table arise from the absence of a "reliable standard for absolute alcohol, and the measure of contraction in mixtures of alcohol and water. The figures given are in nearly all cases experimental, and cannot therefore be verified by calculation." That is so. The question "Which is correct?" that started the discussion, is founded on the erroneous assumption that one of the two figures must be correct and the other incorrect. As well assume that because, on a given standard, the figures expressing a given atomic weight in the 1898 *Pharmacopœia* differ slightly from those in the 1885 *Pharmacopœia*, therefore one or the other is correct, one or the other incorrect. All such figures are purely experimental, and a compiler of a book either selects the figures which, in his judgment, are best founded, or he averages the published results of the workers who, by the judgment of their compeers, are deemed to be equally trustworthy. Good physical data are ever being displaced by what are believed to be better data. Hence the data of a book published in 1898 will, if the compilers do their duty, in certain cases necessarily differ from those in the corresponding book published in 1885. But no critic having commensurate knowledge will suppose that either of the figures so differing will be absolutely correct or incorrect.

The specific gravity of the *Spiritus Rectificatus* of 1885, namely 0·838, was founded on the data still recognised by all good authorities in Britain, namely, the data of Gilpin's tables, *Phil. Trans* Roy. Soc. 1794. Figures of three places of decimals, and not four, were given for the usual reason that the fourth was uncertain. The specific gravity of the *Spiritus*

Rectificatus of 1898, namely 0·8340, was given to the MEDICAL COUNCIL by the highest authorities in such matters in the country. Before the fifth *British Pharmacopœia* is published we shall probably have an elaboration of the work of GILPIN, TRALLES, FOWNES, PRESCOTT (*Ephemeris*, II, 522–54 and IV, 1441), and others, on the specific gravity of ethyl hydroxide and the specific gravities of its admixtures with water. By the way, FLETCHER, *loc. cit.*, further misled his readers by incorrectly quoting the official specific gravity as 0·834, which might, of course, conventionally, as just shown, mean any figure from 0·8340 to 0·8349. The official figure is 0·8340, which means 0 8340, and not any uncertain figure between 0·8340 and 0·8349.

See also under *Alcohol Absolutum* and *Tincturæ*.

Standardisation.—What is conveniently termed *standardisation* is a principle occupying a prominent place in the present *Pharmacopœia*. Indeed, critics complain that it has not been given more complete control. Respecting tinctures, for instance, they cry out for standard specific gravities, forgetting that in the exigencies of dispensing, though some spirit may have evaporated, the residual liquid may be as therapeutically useful as before; clamour for standard fixed residues for tinctures, &c., forgetting that in a series of months (see *Digitalis Folia*) or in a series of years nature rarely grows medicinal plants that furnish to solvents similar proportions either of medicinally active principles or of the mish-mash technically termed extractive (see *Extractum Pareiræ Liquidum*, *Extractum Taraxaci Liquidum*, *and Unguentum Belladonnæ*); call for continuous control over alkaloidal liquids by a standard of total alkaloids, forgetting that the alkaloids in any one liquid may be unequally valuable (see *Extractum Belladonnæ Liquidum* and *Extractum Belladonnæ Viride*; *Extractum Ipecacuanhæ Liquidum*; *Extractum Jaborandi Liquidum*), if not indeed antagonistic (see *Extractum Physostigmatis* and *Tinctura Aconiti*); in short, beg for their hands to be tied at a time when it is more than ever necessary they should be free for purposes of self-defence from over-zealous attacks under the Sale of Food and Drugs Acts, and from the natural, perhaps inevitable, tendency of merchants and manufacturers to take up the old and higher *rôle* of the retailers, and so unfortunately, perhaps again inevitably, relegate the retailers to the lower *rôle* of mere distributors.

There is another view of the matter. Medicine is a noble profession, and pharmacy is an integral part of medicine, hence the followers of pharmacy may be expected to contemplate with more or less of resignation, that effacement of galenical pharmacy by a still less remunerative chemical pharmacy (see also under *Tincturæ*) which this principle of "standardisation" is fast bringing about, more especially as this outcome appears to accord with the principles of evolution and altruism. As COLIN said at the Brussels Pharmaceutical Congress in 1897, P.J. LIX, 179, "there was a general tendency in favour of the opinion that drugs should be of uniform strength so as to remove the objections to most of the galenical preparations, *and do away with infusions, decoctions, and other extemporaneous preparations not having a known composition*" (itals. REP.),

PETIT, *loc. cit.*, admitted "that it was impossible to resist the tendency to employ definite active principles, and that chemical drugs were coming more and more into use." RANWEZ, *loc. cit.*, after discussing the difficulties for and against the standardisation of medicinal preparations, recommended that the Congress should express the wish "that the competent authorities should require a uniform percentage of active or important principles in medicinal preparations." Ultimately his conclusions were adopted by a large majority, and, in regard to the analysis and standardisation of galenical preparations, it was decided, P.J. LIX, 384: "1. That from the double point of view of therapeutic progress and of pharmaceutical science, the establishment of uniform processes and methods for the determination of active constituents of potent medicines had become essential. 2. That every pharmacopœia should indicate the analytical processes applicable for the standardisation of medicines. 3. That such processes should be as far as possible uniform and applicable to drugs, as well as to galenical preparations. 4. That with the view of realising that desideratum, the duty of elaborating a codex of analytical methods, suitable for the valuation of drugs and galenical preparations containing alkaloids, glucosides, and other definite constituents, should be entrusted to an international commission."

Strophanthi Semina.—Under *Extractum Strophanthi*, *q.v.*, a process by BARCLAY and a method by DOWZARD for assaying the extract were mentioned, and a reference was given to the present article for a mode of assaying the seeds. This is by FROMME, and is thus extracted from the *Pharmaceutische Centralhalle*, XXXVIII, 703, by P.J. LX, 504 *d*:—"About 9 grammes of the seeds are finely comminuted in a metal mortar, 8 grammes of the powder are weighed out, and the fat extracted by percolation with petroleum ether. The fat free powder, after evaporating the adherent petroleum ether, is macerated with 80 grammes of absolute alcohol for six to twelve hours. 50·3 grammes of liquid are then run off and evaporated on the water-bath, the residue so obtained is taken up with 6 to 8 grammes of water. Three drops of basic lead acetate are now added to this solution, the precipitate is filtered out, and the filtrate freed from excess of lead by means of sulphuretted hydrogen solution. The lead sulphide is filtered out and washed with hot water, the filtrate evaporated to constant weight, and weighed as strophanthin. The weight thus obtained is the amount present in 5 grammes of the seeds." A paper on the occurrence of choline and trigonelline in the seeds of *Strophanthus hispidus*, by THOMS, will be found in the *Berichte* for 1898, XXXI, 271–277, and at page 404, *op. cit.*, one by the same author on the same substances in *S. Kombé*. Also *op. cit.* 514–516 by KOHN and KULISCH on strophanthin, and 534–541 by FEIST on strophanthin and strophanthidin. All these papers are abstracted in the *Journ. Chem. Soc.* 1898, Abstracts, pt. 1, pp. 328–330. Abstracts of them will also be found in B. & C. D. XXXIII, 380 and 433, and XXXIV, 842.

Experiments by BARCLAY, P.J. LXI, 655, indicate that the application of heat, even to the limited extent contemplated in the official process for

the *Extractum*, is liable to cause destruction of some of the active principle. Here is an opportunity for the elaboration of an improved process in which this fault is avoided.

Styrax Præparatus.—Officially this is defined as being the crude article "purified by solution in ethylic alcohol, filtration, and evaporation of the solvent." DIETERICH, C. & D. LIII, 130, thinks that ether instead of alcohol would prevent dissipation of volatile constituents but would introduce increased fire-risks. He would include an 8 per cent. limit of moisture. Purified storax should, he says, yield no ash. He would state a figure for the alcohol-insoluble content. He would admit the crude article, with limitations as to impurities. The REPORTER ventures to think that these limits afford ample material for investigations and suggestions from the British point of view. In the *Pharmaceutische Centralhalle*, 1898, DIETERICH further proposes, as regards *storax*, "Not more than 2·5 per cent. insoluble in alcohol. Not less than 70 per cent. should remain on evaporation of alcoholic solution (as in U.S.P.). Not more than 30 per cent. volatile."

Sulphur Præcipitatum.—The absurdity, if not worse, of selling under a name purporting that an article is sulphur a substance which, unknown to the purchaser, is only one-third sulphur, is slowly being recognised, and the trade journals of pharmacy are slowly ceasing to countenance the practice. But the insertion in the *Pharmacopœia* of the name "Milk of Sulphur" as a synonym of "Precipitated Sulphur," while it has necessarily hastened the removal of what in old days was the result of ignorance, but what at the present time would be a disgrace to British pharmacy, has raised a few protests of the old pattern. Thus G. H. B. in C. & D. LIII, 134, writes, "*Re* the lac sulphuris, P.L., difficulty, I would suggest that those chemists who still wish to sell the old-fashioned article might label and sell it as 'milk of brimstone.' This might afford a creep-hole." The ED. C. & D., in a footnote, replies, "Ingenious; and to those people, and there are such, whose passionate desire in life is to do what the law says they must not do, the suggestion may be useful. But is the game worth the candle?" BARCLAY, B. & C. D. XXXIV, 657, respecting the official introduction of the synonym "Milk of Sulphur," said, "It seems very doubtful whether this was advisable, since the old milk of sulphur containing sulphate of lime is still in favour as a medicine in some quarters, and must now cease to exist under its old name." The immediate reply, from GERRARD, was "if a person asked for a certain article and preferred to have it with sulphate of lime in it, he was entitled to have it; but if the chemist pointed out to the customer that in one case he was buying pure sulphur, and that in the other the mixture contained sulphate of lime, he would generally prefer the pure to the impure product. In this respect the public wanted educating." The public often swallow sulphur mixed with water, and the pure is said not to "wet" so readily as the impure. Considering that this mixture of calcium sulphate and sulphur, supposed by the public to be sulphur, contains twice as much calcium sulphate as

sulphur, the statement as to "wetting" may be true. But even so, is it beyond the powers of the pharmacist to recommend to a customer a better mode of wetting sulphur than by buying, in ignorance, an article of which two-thirds are water-carrying white earthy matter and one-third sulphur?

Sulphur Sublimatum.—Officially this is required to be without action on litmus and to yield nothing to solution of ammonia. MERCK, C. & D. LIII, 349, says, "Neither is possible unless the sulphur be previously washed." Precisely. The inference is obvious.

Suppositoria Belladonnæ.—GADD, P.J. LXI, 178, in reference to the official directions to make the 12 suppositories with 18 grains of extract of belladonna, suggests, instead, the employment of 30 minims of the liquid extract as affording an easier and more direct operation.

Suppositoria Glycerini.—The official directions respecting the moistened gelatin of the raw materials of these suppositories are "set aside until the Gelatin is quite soft; add the Glycerin; dissolve on a water-bath." MADGSON reports, in a paper published in the three journals of pharmacy for November 18 and 19, 1898, that working in this way she found that some gelatin remained insoluble, but that by transposing these directions, thus: "set aside until the Gelatin is quite soft; dissolve on a water-bath; add the Glycerin" the result was satisfactory; though the addition after the latter quotation of the words "stirring *gently*" would further insure admixture yet prevent the frothing that might ensue from a too vigorous stirring in of air. The theoretical view of the authoress, and most of the pharmacists who discussed the paper, was that the affinity of glycerin for water was sufficient to deprive the gelatin of absorbed water before but not after actual solution in the water had been effected. Be that as it may, much would seem to turn on the extent to which the words "set aside until the Gelatin is quite soft" impress an operator, and the different degree of meaning or force which different individuals give to them. Something, too, will turn on the urgency accompanying an order for these suppositories. And if the knowledge, skill, and judgment already credited to pharmacists on pages xiv and xv of the preface to the *Pharmacopœia* are not considered to be sufficient to warrant such a variation of manipulation as would meet pressing needs, the presumption of synthetical as well as analytical powers in pharmacists could be so indicated in the preface to the next *Pharmacopœia* as to cover such variation. Then, too, besides variations in manipulation, rendered imperative by the hurried requirements of purchasers, there are variations in manipulation demanded by the varying thinness or fineness of the "sheets or shreds" of the gelatin employed. The physical condition of the gelatin contemplated as being used in the present case is such that it will absorb the required amount of water if operators "let it stand for two minutes." In another condition it may require ten minutes. The *Pharmacopœia* compilers, being aware of the before-mentioned dispensing difficulties, are considerate of the best interests of pharmacists in favouring the form of gelatin that requires only

two minutes' contact with water; but recognising that pharmacists possess *full knowledge on all such points* (p. xiv) and are *duly trained* (p. xv), the compilers not only do nothing to prevent dispensers using other forms of gelatin, but actually encourage them, in this and in far more important matters, to give full play to their skill and judgment in the exigencies of their vocation, especially in the highly important relations of their calling to medicine and surgery. Since 1868 British pharmacists as a body have become better and better trained, and as this corporate training increases *Pharmacopœias* may be expected to give less rather than more prominence to details, in short to leave pharmacy as an art to the pharmacist.

The best variety of gelatin for glycerin suppositories is, according to CRINON, P.J. LXI, 505, "colle gélatine cognet extra." He also gives some variations on the official details for these and other suppositories.

Suppositories and Suppository Moulds.—WHITE and BRAITHWAITE, P.J. LIX, 437-441 and 450-451, (*a*) gave results of the examination of various forms of suppository moulds, (*b*) provisionally described a mould the capacity of which could be varied within certain limits so as to enable the dispenser to deal with varying bulks of basis and of medicament, (*c*) alluded to methods of analysing suppositories, (*d*) examined specimens of suppositories obtained from various sources, (*e*) made observations on oil of theobroma, (*f*) considered the methods of manufacture of suppositories. This pharmaceutical research, and further observations by WHITE, alluded to under *Oleum Theobromatis*, with notes by MORGAN in the journals of pharmacy of December 9 and 10, 1898, together form a satisfactory indication that pharmacists will not rest until the preparation of suppositories, in the highest attainable state of perfection, and in the minimum of time, is accomplished. Even as they stand, the official formulæ have given great satisfaction.

Syrupi.—There has been an almost complete absence of useful criticism of the twenty-two syrups. They satisfy those for whose prescriptions these palatable preparations are official, namely, medical practitioners; and they have called forth no adverse comments from the class whose skill suffices for their manufacture, namely, retail pharmacists.

J. C. UMNEY, C. & D. LII, 794, would have had the specific gravity of every syrup stated, as a ready means of checking what he terms "correctness." Another wholesale druggist, GADD, says, P.J. LXI, 179, "It seems a pity that specific gravities are not given for the syrups, forming, as they do, useful and ready tests."

The C. & D. LII, 622, says of the group of syrups, "There is little concession in it to the many criticisms which have been passed upon the inordinate thickness of syrups." DUNLOP, on the other hand, B. & C. D. XXXIV, 619, says of the official syrups, "Many of these have been improved through the quantity of sugar having been reduced."

HAUSSMANN has shown, A. J. P. LXX, 585–595, that the presence of free mineral acids, and to a smaller extent the presence of free organic acids, in syrups is liable to cause the inversion of the cane sugar, with

possible production of brown side products and possible deposition of grape sugar. See *Syrupus Ferri Phosphatis cum Quinina et Strychnina.* Non-acid syrups are very slightly, if at all, thus affected. Syrups containing iodine may become brown and yet yield no trace of free iodine.

Syrupus Aurantii.—The B.& C. D. XXXIII, 518, says, "more unsuitable than before as an adjunct to nauseous medicines, as it does not dilute so well with water." BIRD remarks, P.J. LXI, 164, "improved in flavour by the tincture of fresh peel now used."

Syrupus Cascaræ Aromaticus.—The B. & C. D. XXXIII, 518, considers that it "has all the faults of the *Elixir Cascaræ* B.P.C.' and is not by any means palatable." PARRY, B. & C. D. XXXIV, 35, on the other hand, speaks of it as "agreeable and useful." GADD, P.J. LXI, 179, regards it as "not an elegant preparation, as it quickly deposits." Here would seem to be an opportunity for some further pharmaceutical research.

Syrupus Codeinæ.—The C. & D. LII, 616, regards this as "a good form," but later, LIII, 1027, questions its keeping properties. Here also further pharmaceutical research would seem to be useful.

Syrupus Ferri Iodidi.—The official method of assay is an admitted improvement on an adaptation by KÜBEL, Y.B.P. 1895, 191, of an ordinary silver nitrate titration. It rests on the not unreasonable assumption that the syrup really is the syrup of an iodide, and not of a chloride or bromide. Since the *Pharmacopœia* was published, SWINTON, C. & D. LII, 837, offers the following process, which should be reported on by two or three different pharmacists, for not only is the foregoing assumption avoided, but it appears to be a more trustworthy process than that now official. "Dilute 10 c.c. of the syrup with 90 c.c. water, slowly mix 10 c.c. of this solution with 5 c.c. of strong sulphuric acid, keeping the vessel cool by allowing a stream of cold water to flow over it. When nearly cold thoroughly agitate the mixture with 5 c.c. of 90-per-cent. phenol, then with 25 c.c. of a completely saturated bromine-water; remove the separated iodine by washing out with chloroform (two washings usually suffice), treat the mixture again with phenol-bromine, separate the iodine as before, and mix with the first portion. The whole chloroformic-iodine solution is now covered with a layer of water and titrated with decinormal sodium thiosulphate, with starch-paste as indicator. 1 c.c. decinormal sodium thiosulphate = 0·155 gramme FeI_2." Is it less difficult to conduct than the free iodine process by PARKER, Y. B. P. 1880, 127, and P.J. 3, X, 851?

Syrupus Ferri Phosphatis cum Quinina et Strychnina.—The B. & C. D. XXXIII, 518, remarks, "Another attempt at Easton's syrup, but care has been taken to avoid the errors of previous formulæ." GADD, Y. B. P. 1898, 451, at first decides thus: "unsatisfactory, the precipitation process gives a much better product." J. C. UMNEY replied, *op. cit.* 469, "one of the most satisfactory in the whole *Pharmacopœia.*" MARTINDALE also, *op. cit.*, 482, said respecting the precipitation process, "you washed the

quinine away by such a method." GADD admitted, B. & C. D. XXXIV, 282, that though he still thought the official process unsatisfactory, this "objection to the precipitation process is, however, worthy of consideration." SUTHERLAND, P.J. LXI, 530, said of the syrup, "It deposited in a short time and required a small amount of free acids to keep the salts in solution." HAUSSMANN, A. J. P. LXX, 590, believes the discoloration of this syrup to be chiefly due to the inversion of the cane sugar with formation of brown side products, and to be caused by the phosphoric acid present. Clearly here again is room for further pharmaceutical research. See also *Syrupi.*

Syrupus Glucosi.—This is a mixture of syrup and "liquid glucose of commerce." Two or three critics think that the latter should have been defined. Definition was intentionally omitted. No hard and fast definition could have secured so good a liquid glucose for pill-massing purposes as the trained senses of the pharmacist will secure in two minutes of examination.

Syrupus Papaveris.—Not so much criticism as concern respecting the exclusion of this syrup has been expressed. This has been met by LEECH as follows, in the *Medical Chronicle* for April and May, 1898: "The retention of syrupus papaveris could only be defended on the ground that it is a mild opiate for children. There is evidence that morphine is sometimes contained in poppy-heads, but it is not always there, and it is not possible to standardise the syrup. A preparation of opium which is not uniformly of the same strength, and cannot be standardised, is manifestly unfit for medicinal treatment, especially of children."

"What is to take the place of this syrup now that it is deofficialised?" asks the C. & D. LII, 622. J. C. UMNEY, C. & D. LII, 794, says, "Although it was not extensively prescribed—as is evidenced by the number of medical men who, in response to the invitation of the [Therapeutic Committee of the] British Medical Association, stated that they never prescribed it—yet it is largely used as a household remedy, and it is in these medicines that there is great desirability for uniformity." But he offers no suggestion as to any mode of making it uniform. BIRD, P.J. LXI, 164, alludes to the undesirability of its official retention, remarks that it will still be manufactured in response to extensive domestic demand, and raises the question as to the possible introduction of a "Syr. Opii Co." of constant strength. So far as the REPORTER can gather, the medical view is more or less as follows. While self-medication by non-medical non-pharmaceutical adults, if exercised at all, demands care, intelligence and a due sense of responsibility, and even then is serious enough, the amateur medication of infants, especially with opiates, is far more serious and cannot receive general medical sanction.

Syrupus Phosphatum.—See *Aitken's and Easton's Syrup.*

Syrupus Rhei.—Officially a weakly alcoholic percolate of rhubarb root and coriander fruit is evaporated, and sugar then added. J. C.

UMNEY, C. & D. LII, 795, says, "By this means practically the whole of the spirit is dissipated and what little odour may be extracted from the coriander is lost." He recommended the following formula: "Liquor rhei conc., 4 fl. oz ; Alcohol (90 per cent) 2½ oz.; Ol. coriandri, 5 min ; Aq. destill. 7½ oz. In this mixed liquor the sugar [24 ounces] in the form of powder can be dissolved readily without practically any heat. BIRD, P.J. LXI, 164, also alludes to the waste of alcohol "amongst other defects." COWLEY, P.J. LXI, 234, suggested the addition of oil of coriander, at the end of the process, perhaps dissolved in alcohol. GRIER, P.J., LXI, 531, suggested that this syrup should be made from a liquid extract of rhubarb. But MARTINDALE, P.J. LXI, 235, disagrees with these criticisms. Respecting the *syrupus rhei*, "he thought that was as good a preparation as could well be introduced. It was exhausted by means of weak alcohol, and contained coriander as well. Percolated in that way you exhausted a drug as well as could be, and with syrup it was made palatable and efficacious. With regard to the loss of oil of coriander it was a very minute trace, but still retained a good deal of the flavour, which was sufficient to disguise the rhubarb." These statements are not altogether harmonious. Could not someone calmly investigate the whole subject of the syrup of rhubarb? If DOHME is right (see under *Aloinum*) it is the further investigation of *emodin* that will put the pharmacology and pharmacy of rhubarb on a scientific basis.

Syrupus Sennæ.—See under *Liquor Sennæ Concentratus.*

Tabellæ Trinitrini.—The C. & D. LII, 622, would like to see details given respecting the preparation of these tablets.

Taraxaci Radix.—DRUCE, B. & C. D. XXXIV, 28, appears to think it would be desirable for some mention to be made of its liability to become damaged by keeping.

Terebenum.—The C. & D. LII, 616, says, "Terebenum came into vogue a year or two before the appearance of the last B.P., and now, when it has somewhat gone out again, it finds a place in the new." The C. & D. Diary 1899, 521, gives some characters of terebene from the U.S.P. and B.P. as compared with some by POWER, and adds, apparently under inspiration, "These are the points of difference, and, though slight, they have given much annoyance to manufacturers."

Terebinthina Canadensis.—DIETERICH, C. & D. LIII, 130, considers that *Balsamum Canadense* would have been a more appropriate name.

Tinctura Aconiti.—The futility of standardisation of this tincture on a basis of total alkaloids, or indeed of aconitine, or on any basis short of the estimation of each alkaloid present; will be the provisional conclusion of any reader of the paper on the pharmacology of the aconite principles published in the *Proc. Roy. Soc.* LXII, 338, by CASH and DUNSTAN. For the aconine present may, it appears, act as an antidote, be in actual

antagonism, to the aconitine present. See a lengthy notice of the paper in C. & D. LII, 313; also a note in P.J. LX, 323. As for standardisation on the basis of total solids, it is not worth more than a moment's consideration. It would seem as if the galenical pharmacy of aconite would soon be altogether displaced by its chemical pharmacy. See also *Standardisation* and *Tincturæ*.

Tinctura Aurantii.—See under *Infusum Gentianæ Compositum.*

Tinctura Belladonnæ.—Soon after the *Pharmacopœia* was published warnings were sounded by pharmacists that the new (1898) tincture of belladonna was much stronger than the old (1885). These warnings could but be useful, though the old tincture was commonly so excessively weak in alkaloid and of such variable alkaloidal strength, that medical practitioners may now be congratulated on having a tincture on the therapeutical activity and constant potency of which they can rely, so far as total alkaloidal strength can afford ground for reliance. In his Reports for 1886, 1887, 1892, and 1894, the REPORTER drew attention to the researches of DUNSTAN and RANSOM, A. SMITH, MACKENZIE, DUNSTAN and DYMOND, FARR and WRIGHT, BARCLAY, COWIE, CRIPPS, on belladonna root and leaves and their preparations, all leading up to the present greatly improved pharmacy of this important drug. The 1885 tincture was a leaf-tincture, the 1898 tincture is a root tincture. Several of the workers just named showed that the leaves might vary in percentage of alkaloids from 0·07 to 0·80; see P.J. LI, 470. FARR and WRIGHT, *op. cit.*, 472, showed that in 60 samples of leaf-tincture the percentage of alkaloids varied from 0·013 to 0·045. SEYLER, Y.B.P. 1897, 424, in five samples of tincture found a variation in percentage of alkaloids from 0·014 to 0·028. The employment of leaves for the tincture has, therefore, been abandoned. FARR and WRIGHT also showed, *loc. cit.*, that root-tinctures which they prepared yielded, when made from a sample of German root, 0·020 per cent. of alkaloids, when made from English root 0·030 per cent. Now as to the decision respecting a standard of potency for the root-tincture. To promote uniformity of dosage in the 1898 tinctures, it was necessary to reduce the maximum 20-minims dose of 1885 to 15 minims as a maximum. To get as much alkaloid into 15 minims as would be contained in 20 minims of even a 0·030 per cent. root-tincture, it was obviously necessary to raise the required alkaloidal percentage to 0·040. But, as afterwards recorded by LEECH, *Medical Chronicle* for April and May, 1898, even this percentage strength would have left the tincture somewhat weak in relation to other galenical and chemical representatives of the root. Therefore the required percentage was raised to 0·050 (0·048 to 0·052) where it now officially stands.

Tinctura Benzoini Composita.—The proportion of aloes in this tincture is 160 grains in the pint. The B. & C. D. XXXIII, 522, pleads for 164, because then one gallon of the tincture would require the conveniently round number of 3 ounces of aloes instead of an awkward number of

grains less than 3 ounces. This is a reasonable plea. The 18·3 grammes for 1000 c c. would then become practically 18·75.

Tinctura Buchu.—The C. & D. Diary 1899, 522, remarks: "As 60 per cent. alcohol removes a little mucilage, better increase the alcoholic strength and get more oil."

Tinctura Camphoræ Composita.—MACMILLAN, B. & C. D. XXXIV, 786, thinks that the official synonym "Paregoric" should be "English Paregoric" because another opiate tincture, namely, Tinctura Opii Ammoniata, is known on the northern side of the Border as "Paregoric" and might therefore have the synonym "Scotch Paregoric."

Tinctura Cantharidis.—See under *Cantharis.*

Tinctura Chloroformi Composita.—Representations have been made to the REPORTER that the omission of this tincture is to be regretted inasmuch as it was largely prescribed—at all events in the south-east of England. The opinion of acknowledged leaders in pharmacology was that it contained too much chloroform. If this fault be admitted, prescribers have simply to order, in their prescriptions, equal volumes of spiritus chloroformi and tinctura cardamomi composita and they will get all they require. Or, the three ingredients of the 1885 tincture still being official, they can be prescribed in the old or any other proportions.

Tinctura Cinchonæ.—SEYLER, in 1897, P.J. LIX, 157, found from 0·150 to 0·586 gramme of alkaloids in 100 c. c. of this tincture, then made with alcohol (57 per cent.). It is now prepared with alcohol (70 per cent.) and should contain 1 gramme (0·95 to 1·05) of alkaloids in 100 c. c.

Tinctura Cinchonæ Composita.—The B. & C. D. XXXIII, 518, says "Why saffron should be retained in this preparation and dismissed from *Tinct. Rhei Co.* it would be interesting to learn." See *Crocus*, *Decoctum Aloes Compositum*, *Pulvis Cretæ Aromaticus*, and *Tinctura Rhei Composita.*

Tinctura Guaiaci Ammoniata.—The B. & C. D. XXXIII, 518, says, "It looks as if some one had blundered, and reversed the proportions of nutmeg oil and oil of lemon." Other pharmaceutical critics are similarly biassed by their familiarity with the 1885 tincture. The change in the proportions of oils, indeed the whole change from the old menstruum of aromatic spirit of ammonia to the present, was intentional and was carefully considered and arranged by eminent pharmacologists and therapeutists. A further reply is included under *Tinctura Valerianæ Ammoniata.*

Tinctura Hamamelidis.—See *Hamamelis and its preparations.*

Tinctura Hyoscyami.—See leaf tinctures under *Tinctura Belladonnæ.*

Tinctura Iodi.—See under *Liquor Iodi Fortis.*

Tinctura Jaborandi.—See under *Extractum Jaborandi Liquidum.*

Tinctura Myrrhæ.—MURTON HOLMES, P.J. LX, 502, thinks the increase of the myrrh from 2½ to 4 ounces per pint to be "unnecessary" and "decidedly unfortunate." The increase simply brings the strength up to that desired by British medical practitioners, the strength which is already prescribed in the pharmacopœias of France, Germany, The United States, and fourteen other countries.

Tinctura Nucis Vomicæ.—ALCOCK, C. & D. LIII, 494, reports a liability to cloudiness in this tincture, apparently due to separation of fatty matter, and promises to examine the resulting sediment for alkaloids. Perhaps also he will ascertain how best to avoid the defect, not only temporarily but fundamentally, and report the results. See also *Extractum Nucis Vomicæ Liquidum.*

Tinctura Opii.—Pharmacists had long desired that whatever the origin of the word *laudanum*, and whatever the original composition of this medicine, its character should now be defined "By Authority"; in other words, that the name should appear as a synonym under *Tinctura Opii* in the *British Pharmacopœia.* See P.J. 3, XVII, 324, 344, 404, 424, 464, 503, 584, 604, 644. Consequently in the third reprint, in 1888, of the *British Pharmacopœia* of 1885, that synonym was inserted. Its continuance in the *British Pharmacopœia* of 1898 has given renewed occasion for discussion respecting the word—see P.J. LX, 183, and C. & D. LII, 474, 523, 894—but not a single disagreement as to its definition "By Authority." P.J. LX, 342, remarks of *Laudanum*, "The name is synonymous with tincture of opium throughout the whole of the United Kingdom, and it is doubtless regarded as such wherever the *British Pharmacopœia* is taken as a standard and guide : that is to say, throughout the British Empire."

Tinctura Opii Ammoniata.—See under *Tinctura Camphoræ Composita.*

Tinctura Pruni Virginianæ.—DUNLOP points out, P.J. LXI, 344, that in this case the 12½ fl. ounces of the alcohol (90 per cent.) and the 7½ fl. ounces of the water will not produce a pint of menstruum. The *Pharmacopœia* does not say that they will, but possibly the inevitable contraction was overlooked. One would think that the 7½ of water might as well be 8.

Tinctura Rhei Composita.—Under *Tinctura Cinchonæ Composita*, q.v., the question was raised as to why saffron should be omitted there and retained here. In that tincture it does make some difference perhaps in the flavour and odour, and certainly in the appearance : hence its retention —for the present. In regard to compound tincture of rhubarb, as GADD, P.J. LXI, 179, rightly remarks, it "without saffron differs so little from the old tincture that this economical change would appear to be an unmixed blessing." See also *Crocus, Decoctum Aloes Compositum*, and *Pulvis Cretæ Aromaticus.*

Tinctura Strophanthi.—See under *Extractum Strophanthi.*

Tinctura Valerianæ Ammoniata.—A strongly-worded, but in itself weak, criticism on this tincture and on the ammoniated tinctures of

guaiacum was answered under *Tinctura Guaiaci Ammoniata*, which see. In reply to inquiries as to the net result of merging the two valerian tinctures of 1885, the dose of the rhizome principles is decreased because, while the maximum dose of the old simple tincture is halved, the proportion of rhizome is not doubled, but only raised in the proportion of $2\frac{1}{2}$ to 4, the ammonia is decreased, the nutmeg slightly decreased, and the lemon greatly decreased, thus allowing of desired prominence being given to the nutmeg.

Tinctura Zingiberis Fortior.—There have been published many regrets at the disappearance of this "Essence of Ginger" from the *Pharmacopœia*, nearly all founded on the resulting loss of an official definition for a much-used domestic stimulant. The medical decision was, however, according to LEECH, *Medical Chronicle* for April and May, 1898, that "it has not been deemed desirable to keep in the *Pharmacopœia* two tinctures of ginger."

Tincturæ.—BARFORD, *Lancet*, 1885, II, 636, and KILNER, *op. cit.* 640, almost immediately after the last *Pharmacopœia* was published, expressed in print a very commonly stated medical wish for some simplification of the doses of the tinctures. The PHARMACOPŒIA-COMMITTEE of the MEDICAL COUNCIL, aided, as regards frequent necessary alterations in strengths and processes, by the PHARMACOPŒIA-COMMITTEE of the PHARMACEUTICAL SOCIETY, have now met these desires, with, so far as the REPORTER has observed, entire medical approval. Of the 67 official tinctures, 2, those of arnica and pyrethrum, have no dose; 1, quite an exceptional tincture, that of iodine, has the exceptional dose of 2 to 5 minims; of the remaining 64 no less than 45 have the ordinary dose of $\frac{1}{2}$ to 1 fluid drachm, while 19 are administered in the ordinary dose of 5 to 15 minims—erroneously printed 5 to 10 minims in otherwise useful Tables published in C. & D. LII, 623, and also in C. & D. Diary 1899, 264.

The following quotation from the C. & D. Diary 1899, 522, will answer several critics: "Maceration-tinctures are not made up to a prescribed volume with the menstruum, so that on this point the *Pharmacopœia* is now in line with continental Pharmacopœias. Some pharmacists object to this as waste or as detrimental to uniformity, but that is erroneous. The amount of tincture obtained by maceration and pressure depends upon the power of the press, but what comes out is exactly the same strength as what is left in. *A* may get $17\frac{1}{2}$ oz. and *B* $18\frac{1}{2}$ oz. from 1 pint. In the old way these were made up to 1 pint with the original menstruum, so that *A*'s was the weaker. Both are now the same."

Respecting the so-called standardisation of tinctures, two or three critics have published opinions reflecting, to a greater or less extent, on the compilers of the *Pharmacopœia* for not having gone farther than they have done in this direction. GADD, P.J. LXI, 179, remarks, "Concerning the tinctures as a whole, it seems a pity definite characters such as specific gravities or amount of extractive are not given, when more exact standardisation is not feasible." BARCLAY, C. & D. LIII, 970, says, "The new B.P. is very disappointing in the way it has treated the standardisation of tinctures." J. C. UMNEY, C. & D. LII, 710, makes a somewhat similar

comment. The answer is that standardisation of the tinctures, both as regards so-called extractive and specific gravity, was very carefully considered by the compilers and, on the following grounds, unanimously disallowed. As regards "extractive," the word is enough to show that the thing itself is indefinite. Even assuming, what is well known to be contrary to the fact (see *Balsama Peruvianum et Tolutanum*, *Cascarilla*, *Digitalis Folia* and *Extractum Pareiræ Liquidum*), namely, that a given drug always yields the same proportion of soluble matter to a given menstruum, a sample of the tincture of that drug might yield that proportion, so far as mere weight is concerned, and yet there be no available means of ascertaining that the residue obtained was solely the soluble matter of the drug in question. Conceivably it might be a cheap artificial imitation of the natural substance altogether, yet there be no known means of exposing the fraud. For "extractive" is indefinite, and may be characterless. It would be delusive to the medical practitioner, unfair to the pharmacist, and prejudicial to the interests of the patient, to require officially that a given tincture shall yield a given proportion of "extractive" or "total solids," *quâ* extractive or total solids. The pharmacist is expected to make tinctures himself from officially defined drugs. If he prefers to buy his tinctures, under a guarantee, or from a trustworthy maker, well and good, but on him himself must rest the responsibility of so doing. If he does buy them, it is of course desirable that he should know their specific gravity at the time of purchase, and even the proportion of solid residue that a specimen of any given official tincture may be expected to yield *if it is genuine* (see the accompanying Tables); and he should, of course, bring to bear his professional knowledge of colour, odour, flavour, and other characters. But these are matters outside the purview of a *Pharmacopœia*.

There is another aspect of the question of the specific gravity of tinctures. The compilers of the *Pharmacopœia* had before them specimens of all the tinctures, made on the new principle as to strengths of spirit, prepared on the responsibility of the Editor and with the specific gravity of each stated, as separately determined by the EDITOR, by WRIGHT, and by FARR, on samples made with different parcels of every drug. This was in 1895, before the new dosage principle was adopted, and when the new menstrua were *admixtures* of rectified spirit and water (not the present definite *percentages*). And the whole matter was carefully studied by every individual member of the medical and pharmaceutical committees before being discussed at meetings. The general conclusion was that as no data were available, or could ever be broadly available, as to the extent to which a tincture in a dispensary bottle might lose alcohol in the exigencies of dispensing and of sale (though various pharmacists should experimentally ascertain such data under stated conditions and publish the results), it would be unfair to the pharmacist to give the specific gravity as one of the official characters of a tincture, more especially in the presence of the Sale of Food and Drugs Acts—for, indeed, such a character might be misleading instead of helpful to a magistrate. Allowance is in every case made, *secundum artem*, for any

such loss ; for an ordinary tincture does not, by ordinary evaporation, medicinally deteriorate. And the pharmacist, if there were one, who, taking advantage of the absence of official specific gravities, should either directly adulterate his tinctures with water, or, less directly, adulterate them by making them with alcohol of inferior strength, would be foolish in the extreme, for besides running the risk of certain detection, he would be his own enemy in the matters of reputation and income. See also under *Standardisation.*

That pharmacists should have at disposal specific gravities and other characters of tinctures is quite another matter. Hence the accompanying Tables by the EDITOR of the *Pharmacopœia*, by J. C. UMNEY, and by BARCLAY, are offered by the REPORTER for general guidance. The figures by UMNEY are copied from the C. & D. LII, 711; those by BARCLAY from the P.J. LXI, 655, the C. & D. LIII, 971, and B. & C. D. XXXIV, 753. They show the specific gravities of the tinctures as the tinctures are now set forth in the *British Pharmacopœia*—not as set forth in the previous paragraph, for that would now be useless. The specific gravities were all taken at 60° F. (15·5° C.). The residues were dried at 212° F. (100° C.), the residues column also including the standards of the 12 or 13 officially standardised tinctures (marked *), as well as BARCLAY'S suggested standards of alkaloids, glucosides, resins, &c. Should any of these latter become sufficiently developed by further research as to fit them for standards in the next *Pharmacopœia*, the compilers of that work will, doubtless, accord them a hearty welcome. In any case workers who take notes of the specific gravities of finished tinctures and of the solid residues of those tinctures should publish their results, for pharmacists who employ such data cannot have too broad a basis for judgment.

THE TINCTURES OF THE "BRITISH PHARMACOPŒIA" OF 1898

Tinctura :—	*Specific gravities as freshly made*			*Standards of Solids*	
	Attfield	*Umney*	*Barclay*		*Barclay*
Aconiti	0·895	0·893	0·890	0·02	ether-soluble alkaloids
Aloes	0·973	0·975	0·970	7·0	total solids
Arnicæ	0·894	0·893	0·894	0·60	,,
Asafetidæ	0·912	0·914	0·914	10·0	resin
Aurantii	0·880	0·876	0·885	2·0	total solids
*Belladonnæ	0·914	0·916	0·914	0·05	total alkaloids
Benzoini composita	0·894	0·893	0·900	2·5	benzoic & cin'ic acids
Buchu	0·926	0·927	0·934	4·0	total solids
Calumbæ	0·916	0·918	0·920	0·8	,,
*Camphoræ composita	0·918	0·915	0·920	0·05	anhydrous morphine
Cannabis indicæ	0·847	0·846	0·846	4·00	total solids
Cantharidis	0·835	0·834	0·838	0·25	,,
Capsici	0·892	0·893	0·896	1·50	,,
Cardamomi composita	0·948	0·945	0·948	6·50	,,
Cascarillæ	0·901	0·898	0·900	1·60	resin
Catechu	0·980	0·977	0·977	14·50	total solids
Chiratæ	0·921	0·921	0·920	0·80	,,
*Chloroformi et morphinæ	1·014	1·011	1·012		
Cimicifugæ	0·925	0·928	0·924	2·00	total solids

* Officially standardised.

THE TINCTURES OF THE "BRITISH PHARMACOPŒIA" OF 1898—*cont.*

Tinctura :—	*Specific gravities as freshly made* Attfield	Umney	Barclay		*Standards of Solids* Barclay	
*Cinchonæ	0·920	0·916	0·918	...	1·00	alkaloids
*Cinchonæ composita	0·916	0·912	0·918	...	0·50	„
Cinnamomi	0·903	0·899	0·904	...	2·40	total solids
Cocci	0·956	0·951	0·955	...	2·50	„
Colchici	0·950	0·950	0·953	...	0·075	colchicine
Conii	0·897	0·895	0·896	...	0·09	total alkaloids
Croci	0·925	0·925	0·927	...	3·00	total solids
Cubebæ	0·840	0·846	0·840	...	2·00	oleo-resin
Digitalis	0·934	0·928	0·932	...	3·60	total solids
Ergotæ ammoniata	0·934	0·935	0·934	...	4·00	„
Ferri perchloridi	1·087	1·085	1·086			
Gelsemii	0·924	0·924	0·925	...	0·025	gelsemine
Gentianæ composita	0·964	0·965	0·966	...	5·00	total solids
Guaiaci ammoniata	0·898	0·900	0·900	...	15·0	resins
Hamamelidis	0·949	0·948	0·952	...	2·0	total solids
Hydrastis	0·926	0·923	0·925	...	2·5	„
Hyoscyami	0·954	0·950	0·953	...	0·008	alkaloids
*Iodi	0·877	0·878	0·878	...	2·5	iodine
Jaborandi	0·954	0·952	0·953	...	0·048	pilocarpine
*Jalapæ	0·908	0·910	0·906	...	1·50	resin
Kino	0·996	0·998	0·995	...	5·00	kinotannic acid
Krameriæ	0·936	0·932	0·938	...	5·00	total solids
Lavandulæ composita	0·836	0·836	0·836	...	0·60	„
Limonis	0·877	0·876	0·888	...	2·00	„
Lobeliæ ætherea	0·817	0·816	0·816	...	0·07	lobeline
Lupuli	0·936	0·931	0·938	...	4·00	total solids
Myrrhæ	0·850	0·848	0·854	...	5·60	resins
*Nucis vomicæ	0·909	0·910	0·912	...	0·25	strychnine
*Opii	0·955	0·952	0·958	...	0·75	anhydrous morphine
*Opii ammoniata	0·894	0·900	0·895	...	0·113	„
*Podophylli	0·846	0·844	0·850	...	3·65	resin
Pruni virginianæ	0·935	0·939	0·934	...	3·00	total solids
Pyrethri	0·903	0·904	0·900	...	1·60	„
Quassiæ	0·946	0·942	0·946	...	0·016	quassin
Quillaiæ	0·920	0·922	0·919	...	1·25	total solids
*Quininæ	0·890	0·888	0·894	...	2·00	quinine hydrochloride
*Quininæ ammoniata	0·929	0·928	0·925	...	2·00	quinine sulphate
Rhei composita	0·972	0·971	0·970	...	4·50	total solids
Scillæ	0·967	0·970	0·960	...	10·00	„
Senegæ	0·935	0·935	0·938	...	4·80	„
Sennæ	0·992	0·993	0·988	...	10·00	„
Serpentariæ	0·898	0·894	0·896	...	2·00	„
Stramonii	0·960	0·953	0·962	...	0·04	total alkaloids
Strophanthi	0·892	0·890	0·892	...	0·30	strophanthin
Sumbul	0·901	0·900	0·898	...	2·50	total solids
Tolutana	0·859	0·866	0·860	...	2·0	benzoic & cin'ic acids
Valerianæ ammoniata	0·940	0·939	0·942	...	3·00	total solids
Zingiberis	0·840	0·839	0·835	...	0·40	„

* Officially standardised.

In the REPORTER'S first Report on the *Pharmacopœia*, in 1886, the following occurs on page 13. "The raw materials of the tinctures differ widely from each other, or fall into very small groups, yet twenty tinctures are still prepared with one strength of spirit, rectified spirit, while more than forty are prepared with spirit of one other strength, proof spirit. Probably almost every separate raw material needs a special and separate spirituous or other menstruum to produce the maximum of efficiency in the preparation as a curative agent with the minimum dose of mere menstruum to the patient." And that was only the development of recommendations made by the writer so far back as 1864. See P.J. 2, VI, 9–12. He will be excused if he expresses gratification that his continued advocacy of the principle for more than thirty years has resulted in its official adoption. In 1889 WRIGHT announced, P.J. 3, XX, 240, that he had made each official drug-tincture with four different strengths of spirit. For details see Y.B.P. 1890, 471–478. FARR followed with a complementary research, Y.B.P. 1890, 478–484. FARR and WRIGHT afterwards joined forces and produced a series of twelve classical pharmaceutical researches—typical *pharmaceutical* researches—for references to which, see the writer's Report for 1892, page 16. Without these and subsequent researches by the same workers the principle now alluded to could not have been carried out. But other workers have contributed: BURTON in 1844, afterwards SAVAGE, STODDART and TUCKER, FINDLAY, FLETCHER, and more than twenty others. For references to these, and for the further history of pharmaceutical research in relation to official tinctures, see the writer's Reports on the *British Pharmacopœia* of 1885; especially the Report for 1886, pages 13–14, and for 1892, pages 13–20.

Trochisci.—A wholesale druggist in the B. & C. D. XXXIII, 523, respecting the detailed official directions, B.P. p. 441, for the preparation of the medicinal lozenges, remarks, "It seems absurd to devote so much space and trouble to one of the smallest departments of pharmacy." The C. & D. LII, 616, recognises even this small department as quite worthy of comment and approval, and thus draws attention to some alterations: "The descriptions of the bases and the instructions for their preparations are, like other general processes, now relegated to the Appendix. Space is thus economised and needless repetition avoided."

Clearly the official lozenges made with the fruit basis should be smooth, if only to insure the legibility of their names, which will of course be stamped on them by the makers, as usual with all medicinal lozenges. WARRICK points this out in a useful note to the P.J. LX, 524, and C. & D. LII, 894. He adds that they do not contain enough black currant paste to necessitate their being made with a rough surface. Lozenges made wholly or largely of fruit paste must be dusted with coarse sugar to prevent adhesion to the slab on which they are manipulated, and the result is roughness of surface. The fruit-basis official lozenges do not need such treatment; a little starch powder suffices for them. As uniformity in the appearance of

the official lozenges is desirable, it is hoped that his suggestions as to smoothness of surface will be followed generally.

In the B. & C. D. XXXIV, 786, MACMILLAN is thus reported: "Why was troch. bismuthi com. honoured with a 'comp.' when it was denied to troch. sulphuris—a lozenge, by the way, which was always called compound?" From the medical point of view, which prevails in a pharmacopœia, the former is compound (containing, as it does, salts of bismuth, magnesium, and calcium in medicinal quantities) while the latter (containing, as it does, only sulphur in a medicinal proportion) is not compound. See also under *Linimenta* and *Mistura Cretæ*.

Unguenta.—As with the *Liquores Concentrati* and the *Tincturæ*, and many other galenical preparations, so with the *Unguenta*, specimens of each ointment now official, and several others, prepared by the best workers under the responsibility of the Editor, were submitted to the Compilers of the *Pharmacopœia*, and were carefully examined before the official "monographs"* respecting them were accepted or rejected.

For ointments that might be made with oils other than olive see under *Oleum Olivæ*.

Unguentum Acidi Carbolici.—In the journals of pharmacy for January 21 and 22, 1898, too late for consideration in connexion with the new *Pharmacopœia*, HENRY suggested the following formula for carbolic ointment. Carbolic acid, 1; glycerin, 2; water, 2; wool-fat, 14: all by weight. As regards glycerin the official formula is anticipatory. But MACK, in the same journals for December 9 and 10, 1898, says that the glycerin readily separates, and that he finds the best basis to be a mixture of yellow wax and olive oil in the proportions of 1 to 4. With this DUNCAN and SINCLAIR, *loc. cit.* disagreed, favouring hydrous wool-fat or cold cream; while HENRY recommended not wool-fat, as before, but hydrous wool-fat. There would seem to be room here for further pharmaceutical research.

Unguentum Aquæ Rosæ.—SUTHERLAND, B. & C. D, XXXIV, 620, found that the rose water was thrown out in the course of a week. WATSON, *loc. cit.*, said that "With great care they could get in all the rose water and make a very presentable preparation."

[There appears to be a good deal of confusion in a few minds as to the official difference between "Rose Water" and "rose water" (with and without the capital letters—see Preface, p. ix). In connexion with the words as they appear in the formula for the ointment, clearness would perhaps be promoted if, in the next *Pharmacopœia*, the words

* During the compilation of the *British Pharmacopœia* of 1898, the necessities of conversation and correspondence, as well as of perspicuity and brevity, led to—or rather forced upon all concerned—the employment of the word *monograph* for each of those 829 sets of paragraphs which describe the 829 medicaments of the book. And indeed the term as so used, though unusual, is not incorrect, for the said descriptions are often single condensations of many published memoirs relating to the respective drugs, or of many "monographs" more usually and strictly so called. Moreover, the word is at least etymologically correct, when employed as now suggested. Its use, in connexion with the *Pharmacopœia*, is strongly recommended.

" Rose Water, undiluted " were altered to " Rose water of commerce, undiluted' (small w); and if " Rose Water " in the directions were displaced by " undiluted rose water." For *Rose Water* is the officially recognised diluted article defined in the text under *Aqua Rosæ*, while " undiluted rose water " is only officially recognised as " the rose water of commerce," and only officially defined in a text-note to *Aqua Rosæ*. C. & D. LV, 709, 711, 804, 833. Dec. 1899. REP.]

Unguentum Atropinæ.—DUNLOP, P.J. LXI, 529, would term such alkaloidal ointments *oleate ointments*—for example, *Unguentum Atropinæ Oleatis*. If official names are to reflect composition some would be inconveniently long. Would he change " Belladonna Ointment " to " Ointment of Evaporated Liquid Extract of Belladonna " ?

Unguentum Belladonnæ.—As a result of the variation in soluble matter of belladonna, as of all plants, from year to year, its liquid extract when evaporated to one-eighth of its bulk for the preparation of the official ointment may yield a soft residue, a tough residue, or a pulverisable residue. Some of the dispensing difficulties consequent on this circumstance will be avoided if the 2 fluid ounces of liquid extract are evaporated not to ¼ but ½ fl. oz., the benzoated lard being reduced correspondingly to 2 ozs. for the maintenance of the alkaloidal strength of the ointment. In drawing attention to this state of things, J. C. UMNEY, C. & D. LII, 890, seems to favour, as a remedy, the employment of English belladonna root, with which he has not met the same difficulty. GADD, P.J. LXI, 179, favours diminished evaporation (*vide ante*), and this would be in accordance with the original suggestion of CRIPPS, P.J. LIV, 796. The natural variation in the proportion of " extractive " to which all plants, therefore medicinal plants, therefore their galenical preparations, are liable, will in the present case probably find a satisfactory remedy to be the displacement of *Unguentum Belladonnæ* altogether by *Unguentum Atropinæ* or some such simple alkaloidal ointment.

Unguentum Cantharidis.—See *Cantharis*.

Unguentum Cetacei.—The official directions include the final one to stir constantly until cold. MACMILLAN, B. & C. D. XXXIV, 786, prefers to " set aside to cool without stirring "; ROBERTS also, C. & D. LIII, 384. This appears to be only a question of slight variations in manipulation. See under *Unguentum Paraffini*.

Unguentum Conii.—BIRD, Y.B.P. 1898, 446, says: " The boric acid [of the 1890 Additions] is omitted; this ointment now becomes mouldy." The boric acid did not, or certainly did not always, prevent mouldiness. A little pharmaceutical research is wanted here.

Unguentum Hamamelidis.—The London correspondent of the *Montreal Pharmaceutical Journal*, in the number for December, 1898, says: " The new ointment of hamamelis will not keep, now that boric acid is omitted

from its composition." It never had any boric acid in its composition. See also under *Hamamelis, and its preparations.*

Unguentum Hydrargyri.—The C. & D. Diary 1899, 522, says: "It is time the B.P. permitted the mercury to be 'killed' as it is in the plaster [by aid of a few grains of sulphur], or a little oleate of mercury or lanoline might be used for the purpose." A little more pharmaceutical research is needed as to the best material to use and as to the best mode of using it by ordinary pharmaeists.

Unguentum Hydrargyri Nitratis.—In a discussion at the Belfast meeting of the British Pharmaceutical Conference, Y.B.P. 1898, this ointment was thus referred to. BIRD, p. 486, first contributed the following experimental notes. "Unguentum Hydrargyri Nitratis still continues an unsolved problem. The formula as it stands does not in all cases give a perfeet result, for the ointment is neither of a very good colour when made, nor does it retain its eolour for any length of time when kept. Moreover, the high temperature to which the fat and oil are directed to be heated renders the operation a difficult one to carry out, especially on the large scale. A modification of the official process, which yields an excellent product, depends on the fact that lard, either crude or imperfectly oxidised, has a powerful reducing action on nitrate of mercury ointment, whilst olive oil has little or none. If, therefore, the lard be hcated on a waterbath with the nitrate of mercury solution to as high a tempcrature as possible until reaction nearly ceases, and the olive oil be then added, the heat being continued for a short time, a product of excellent colour and consistence will be obtained. This proeess is more manageable than the official one; by completely oxidising the lard with excess of solution of nitrate of mercury the keeping qualities of the ointment are greatly improved." GADD, p. 452, then remarked that the present official process was "a decided improvement"; J. C. UMNEY, p. 469, said that the product was less permanent, due probably to the too high temperature prescribed, 220° F. (143·3°C.); while MARTINDALE, p. 481, considercd the preparation good, but "required great experience to makc it well." Clearly the official process is not perfect—perhaps no process for such an ointment ever will be—but it is odd if pharmacy cannot by rcsearch, either in thc direction indicated by BIRD, or perhaps by employing other fats and complete variations of process, produce a mercuric nitrate ointment fully as uscful as that now official, but more durable.

Unguentum Hydrargyri Oxidi Flavi. An Amcrican correspondent, STURMER, in order to obtain the yellow mercuric oxide in the "very fine powder" officially ordcred, strongly recommcnds trituration in a mortar with enough alcohol to form a paste, the yellow soft paraffin being then gradually added with morc trituration until the odour of alcohol is no longer noticcable. Trituration with freshly prccipitated yellow oxide, which has not been dried, as recommended by SCHWEISSINGER, P.J. LX, 324, is not only complicated and tedious but gives an ointment lacking

keeping quality, the presence of moisture hastening the reduction of the oxide.

Unguentum Hydrargyri Oxidi Rubri.—The details just given should be applicable for this ointment. Perhaps some pharmacist will repeat the experiments with each ointment and publish the results.

Unguentum Paraffini.—ROBERTS, C. & D. LIII, 384, warns pharmacists that in carrying out the official direction to triturate constantly until cold, if air be stirred in a lumpy product may result. See also under *Unguentum Cetacei. Trop de zèle gâte tout.*

Unguentum Staphisagriæ.—GADD, Y.B.P. 1898, 452, said that this "would be better made from the oil." MARTINDALE, *op. cit.* 483, replied, that "he did not think the oil contained all the properties of the drug, and that the maceration of the stavesacre seed in the melted fat gave a better preparation than if it were made from the oil." The chief experimental data on the pharmacological side of this question are those by B. SQUIRE, B.M.J. for June 1, 1877, and P.J. 3, VII, 1042. These point to the use of the oil, provided it be sweet. The liability of the ointment to become rancid suggests, on the other hand, that it be made "fresh and fresh" from the seeds.

Unguentum Sulphuris.—In the journals of pharmacy for November 18 and 19, 1898, DUNLOP, commenting on the diminution of the proportion of sulphur from 1 in 5 (1885) to 1 in 10 (1898) remarked that it now "was a very watery looking preparation, and one wondered what called for it being altered." Presumably he referred to the present ointment being lighter in colour than the old. The leading medical authorities decided that 1 in 10 was a better proportion than 1 in 5.

Veratrina.—STOEDER, B. & C. D. XXXIV, 517, does not understand why the *British Pharmacopœia* should give a process for "this alkaloid" and not for others, for "surely this alkaloid is amongst all the others the least important." The answer may be perceived in the first line of the official article, namely, "an alkaloid or mixture of alkaloids." The composition of the medically useful substance known as veratrine being indefinite, the only method of showing what was required was to give the process. Where analysis fails synthesis may be invoked. The so-called veratrine much needs further research by qualified chemists.

The natural source is given officially as "from cevadilla, the dried ripe seeds of Schœnocaulon officinale, *A. Gray.*" DRUCE, B. & C.D. XXXIV, 337, says: "The name is antedated by that of *Sabadilla*, Brandt and Ratzeb. (1836 or early in 1837), in Hayne Arzn., Vol. XIII, t. 27. Asa Gray's genus was not established before the end of 1837. The plant is *Sabadilla officinalis*, Brandt and Ratzeb. but there is still an earlier name in the uncouth genus founded by Rafinesque in Fl. Tellur., vol. iv (1836), p. 27, and if this be adopted the plant will stand as *Skoinolon officinale.*

HOLMES replies (through the REPORTER): "The name Sabadilla was not given as a generic one by Brandt and Ratzeburg, nor is the name correctly quoted by Druce. The plant is described in Hayne's work under the name of *Veratrum officinale*, Undergattung (sub-genus) *Sabadilla*, Brandt. In a footnote the authors remark that it is placed in a sub-genus to indicate that it differs in certain particulars from the genus *Veratrum*, but that the future must show whether it should be raised to generic rank or whether it should be sunk under *Helonias Leimanthium* or *Chamælirium*, and adds: 'Daher können wir den künstig ihm vielleicht zu ertheilenden Namen *Sabadilla officinarum nur fraglich andeuten.*' Having expressed this doubt the authors give the name *Sabadilla officinarum* Brandt, as a synonym under the name they adopt, viz. *Veratrum officinale*. Obviously, therefore, the authors did not use it as a generic name, and it cannot rank as such. How far the name *Skoinolon officinale* of Rafinesque may have a claim to adoption I cannot say, as neither of our large national herbaria at Kew or S. Kensington appears to have a copy of this very scarce work. In any case succeeding authors and the best botanical authorities have ignored it. *Schœnocaulon officinale* has a much better claim to be retained."

Vina.—GRIER, in the journals of pharmacy for November 18 and 19, 1898, is thus reported: "In the matter of wines, seeing that the presence of tannin and free acids is objectionable, he thought they ought to be detannated, or that a weak-flavoured alcohol be used instead, as recommended by the U.S.P. revision committee."

Vinegars.—See under *Acidum Aceticum*.

Vinum Quininæ.—ALCOCK, P.J. LXI, 479, reports that a turbidity, which a correspondent of the C. & D., LIII, 648, had already noticed as a result of a slight fall in temperature, is probably due to a separation of quinine citrate, for he detected the radicals of that salt in a sediment from a 54-gallon batch of official quinine wine. What proportion of the 8000 grains of quinine hydrochloride had thus been precipitated he did not state. But any cloudiness, even if only observable in winter, is a fault and should be remedied. Perhaps other pharmacists will record their experience, and ALCOCK or other experimentalist look farther into the matter.

Water.—See *Aquæ*.

Wool Fat.—See *Adeps Lanæ*.

Zingiber.—The ash-yield of ginger, according to HOCKHAUF, C. & D. Diary 1899, 266, was:—African, Cochin, and Jamaica, 3 to 8 per cent. of ash; Brazilian, 9·35, of which 1·87 was insoluble in hydrochloric acid. DRUCE, B. & C. D. XXXIV, 28, suggests an official indication of the amount of resin which should be present in ginger, since "spent" ginger is occasionally used as an adulterant. The data for such an indication

are, at present, wanting. See the opinions of LIVERSEEGE, WRIGHT, NAYLOR. and UMNEY, on this subject, Y.B.P. 1896, 361. Here, again, more pharmaceutieal researeh is needed.

Appendices and Index.—Very few eriticisms have been offered, but several very interesting questions have been started, respecting the items of the Appendiees and the eonstruction of the Index. These questions, especially those relating to Volumetric Analysis, Atomic Weights, and Weights and Measures, will, like interesting questions relating to the paragraphs of the *Preface*, ripen during the next few years. Then will be the more appropriate time to focus opinions for the aid of those on whom will rest the responsibility of eompiling the fifth *British Pharmacopœia*.

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